DOCUMENT RESUME

ED 205 710 CE 029 678

TITLE	Industrial Arts Safety Guide. Chinese. Bilingual Education Resource Series.
INSTITUTION	Seattle School District 1, Wash.; Washington Office of the State Superintendent of Public Instruction, Olympia.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	78
NOTE	130p.; Not available in paper copy due to small print. For related documents see CE 029 677-682.
LANGUAGE	English; Chinese
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Accident Prevention; Accidents; Auto Mechanics; *Bilingual Education; Drafting; Electric Batteries; Electricity; Electronics; Fire Protection; Foundries; Graphic Arts; Guidelines; Hand Tools; *Industrial Arts; Lifting; Machine Tools; Metal Working; Power Technology; *Program Development; *Safety; Safety Education; School Accidents; School Safety; Secondary Education; *Vocational Education; Welding; Woodworking
IDENTIFIERS	*Bilingual Materials; Combustion; Soldering

ABSTRACT

Designed for use in bilingual education programs, this industrial arts safety guide presents guidelines for developing a student safety program and three sections of shop safety practices in both English and Chinese. Safety program format, safety committees, safety inspection, and student accident investigation are discussed in the section on developing a student safety program. Set forth in the section on general safety practices are safety instructions for all areas of industrial arts; safety rules for machine tools, hand tools, and portable electric hand tools; housekeeping; back strains and proper lifting; safe lifting; materials handling; personal practices and conduct; and fire control. Safety procedures relating to automotive and power mechanics; compressed gas; drafting room; dusts, fumes, and combustible materials; foundry practices; flammable and combustible liquids; electricity/electronics; graphic arts; soldering; and storage batteries are covered. Specific machines examined in the section on safety procedures for machines include buffers, drill presses, forges, grinders, jointers, lathes, milling machines; planer-surfacers; presses, sanders, saws, metal shapers, shears, sheet metal machines, and welders. (Corresponding bilingual guides containing material in Korean, Thai, Cambodian, Japanese, and Ilokano are available separately through ERIC--see note.) (MN)

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Bilingual Education Resource Series

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ED205710

Industrial Arts Safety Guide

CHINESE

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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CE023678

Dr. Frank B. Brouillet, State Superintendent of Public Instruction

Olympia, Washington 98504

INDUSTRIAL ARTS SAFETY GUIDE

CHINESE VERSION

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Division of Special and Equal Education Programs
Office of Bilingual Education

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Chinese Version
1978

INDUSTRIAL ARTS SAFETY GUIDE

安全指南

華盛頓州工業藝術課

學生適用
中文譯本

SEATTLE PUBLIC SCHOOLS

Student Section

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NO TRANSLATION

Chinese Version

導論

Introduction

意外事件之預防意無疑問地始自「穴民」時期，當人類第一次發現因不安全情況或缺乏知識而被傷害時。例如：先民發覺火是不會在炊中或潮濕地方燃燒，他們會用棍子從火中移動物品，如他們要操作熱物時大概會用動物皮造的手套，這樣才可免於受燒傷。

自那時開始各種預防在工作環境中受傷的方法都已實施。

近年來研究發現做成意外的原因人為因素比不安全情況更多。意外的發生多是不安全情況加上不安全行動所致。其警覺情況者及知道怎樣會受傷害者大概多不會發生意外。

安全是建立在自律上，安全不能沒有它。不留心或草率不能防止意外。有道理之知識及簡單的自律可以防止意外。

在任何情況下「安全第一」為最合適的口號。每個目擊過意外的人都知道在任何活動時都要有安全的工作習慣。工作前不思考最做成意外的主因，常常意外的做成是由於不當的操作工具，忽略工具或机器的保养，不用保護方法，和不良或不佈心的工作環境。

工業界及政府已經力的去消除可能會做成危險的情況，並經力加強机器之正會保养及提供安全的工作環境。

如要預防意外對手中操作的物件要特別小心，在讀完此指南時你會对操作的東西更為熟習及培养出安全的習慣。

記住 — 安全操諸你！

卅垚 EVANS 致學生信 S-1.01

你有何損失？ S-1.02

18-7-1 THIS TRANSLATION OF 7/21/78 SUPERSEDES ALL PREVIOUS TRANSLATION

譯文以英文原文為依据

S-1.00

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR
OLYMPIA

DANIEL J. EVANS
GOVERNOR

To the Industrial Arts Student:

As a father, as well as the Governor of the State of Washington, I feel an obligation to write to each of you concerning the importance of safety. The work habits you will be taught in your Industrial Arts class can form the background for safe operation of hand and power tools throughout your life. The need for safety does not stop when you leave the Industrial Arts classroom. It should carry on to your work at home and later, on the job.

It is a waste of the potential of a young life to have a finger, hand or eye lost or mutilated because of a careless act. I hope you will all join me in a dedication to safety in your Industrial Arts classes as well as in the years to come.

Sincerely,

Daniel J. Evans
Governor

DJE:ss

NO TRANSLATION

What have you got to lose?

Your eyes

Watching television
A sunset
A good book
A friend's smile
An attractive person

Your hearing

Laughter of a friend
A bird at your window
A rock concert
The call of your name

Your hands

A game of softball
Buttoning your shirt
Driving a motorcycle
Holding hands with a special person

Your back

Playing on the beach
Getting into your car
A day skiing
Dancing
A comfortable night's sleep

Your legs

A walk on the beach
A game of tennis
Running and hiking
A bicycle ride

Your life

The remainder of today, every tomorrow. The entire rest of your life.

That's what you've got to lose!

NO TRANSLATION

Student Safety Program

Organized safety programs are a good approach to reducing accidents.

There are many types of safety programs. The effectiveness of a good safety program is reflected in the reduction of accidents.

The program on the following pages has suggestions that can be used and/or modified to meet the needs of your school.

Safety Program Format S-2.01

Safety Committee Minutes Form S-2.02

Safety Inspection Check List S-2.03

Accident Investigation Report S-2.04

NO TRANSLATION

SAFETY PROGRAM FORMAT

Organization

Each Industrial Arts class should organize its own safety committee. There should be at least five student members on the committee; two members should be rotated each month. The committee should:

1. Meet every two weeks; more often if the need arises.
2. Review and approve the safety inspection report.
3. Review and discuss all safety recommendations.
4. Study the cause of accidents occurring since the last meeting.
5. Prepare minutes of the meeting and post them on the bulletin board.
6. Maintain a permanent file of accident reports, minutes, and other appropriate materials.
7. Appoint a student safety inspector.

Inspection

Inspection should be made prior to each safety committee meeting. The inspection and written report should reflect the conditions of the area -- housekeeping, fire prevention, first aid equipment, personal protection equipment, unsafe work activities, hazards and guarding needed. Recommendations should be made for corrections.

Education

A bulletin board should be used to alert the class to safe work habits. A member of the committee should post safety materials and minutes of the meetings. Classroom safety meetings should be encouraged with members of the committee participating as leaders.

Accident Reports

Accident reports are an essential part of a good safety program. They help to inform, educate, and remind people of what to look for in regard to accident prevention. They also provide a record of safety items and safety activities.

1. A member of the committee should be assigned to complete accident reports in addition to the instructor's report required by the School District.

2. When a student is injured or is directly responsible for a condition that could cause an injury, that student should be encouraged to cooperate with the committee and attend committee safety meetings.

3. A member of the committee should be assigned to see that action has been taken to prevent a similar accident from taking place in the future.

NO TRANSLATION

SAFETY COMMITTEE MINUTES FORM

Class_____ Date of Meeting_____
Name and Title

Period_____ Time Opened_____

Location_____ Time Closed_____

Instructor_____

Members Present: _____

_____

_____

_____

_____

Order of Business:

1. Review of past recommendations and action taken.
2. Review of accidents since last meeting and suggested corrective measures.
3. Review of inspector's report.
4. Discussion for improvement of the safety program.
5. Selection of chairman and new members for next meeting.

_____

_____

_____

_____

_____

_____

_____

_____

(Use other side of sheet if necessary)

NO TRANSLATION

STUDENT ACCIDENT INVESTIGATION REPORT

Class_____ _____Period_____Room_____

Instructor's Name_____

Name of Injured_____Date & Time_____

Exact Location of Accident_____

Description of Accident*_____

_____

Indicate below with an "X" whether in your opinion accident was caused by one of the following:

PHYSICAL CAUSES

( ) Improper protection (personal or equipment)
( ) Defective tools or equipment
( ) Hazardous arrangement
( ) Improper illumination
( ) Poor housekeeping
( ) Not listed - describe briefly*

_____
_____

PERSONAL CAUSES

( ) Physical or mental defect
( ) Lack of knowledge or skill
( ) Wrong attitude
( ) Use of intoxicants or drugs
( ) Not listed - describe briefly*

_____
_____
_____
_____

UNSAFE ACTS

( ) Working without authority
( ) Failure to secure or warn
( ) Working at unsafe speed
( ) Made safety device inoperative
( ) Used unsafe equipment or hands instead of equipment
( ) Not listed - describe briefly*_____

( ) Unsafe material handling
( ) Took unsafe position
( ) Worked on moving equipment
( ) Horseplay
( ) Did not use safe clothes or personal protective equipment

_____
_____

NOTE: Make certain of names and descriptions of witnesses, injured sent to hospital, condition of injured, assistance by others, etc.

Actions taken to prevent a similar future accident*_____

_____
_____
_____

Date of Report_____Signature_____

NO TRANSLATION

* USE OTHER SIDE OF SHEET IF NECESSARY.

STUDENT SAFETY INSPECTION CHECK LIST

Class_____Period_____Date_____

Hazardous conditions and unsafe acts should be reported so corrective action can be taken. Note also whether potential accident causes, marked "X" on previous inspection, have been corrected.

( ) indicates Satisfactory (X) indicates Unsatisfactory

A. FIRE PROTECTION
1. Extinguishing equipment....( )
2. Exits, stairs and signs....( )
3. Storage of flammable material.....( )
4. _____( )

B. HOUSEKEEPING
1. Aisles, stairs & floors....( )
2. Storage & piling of material.....( )
3. Wash & locker rooms.....( )
4. Light and ventilation.....( )
5. Disposal of waste.....( )
6. _____( )

C. TOOLS
1. Power tools, wiring.....( )
2. Hand tools.....( )
3. Use & storage of tools....( )
4. _____( )

D. PERSONAL PROTECTIVE EQUIPMENT
1. Safety glasses or goggles..( )
2. Face shields.....( )
3. Gloves.....( )
4. Respirators or gas masks...( )
5. Protective clothing.....( )
6. _____( )

E. MATERIAL HANDLING EQUIPMENT
1. Winches.....( )
2. Cranes, hoists, booms.....( )
3. Carts.....( )
4. Cables, ropes, chains, slings.....( )
5. Rigging.....( )
6. _____( )

F. BULLETIN BOARDS
1. Neat and attractive.....( )
2. Display changed regularly....( )
3. Well illuminated.....( )
4. _____( )

G. MACHINERY
1. Point of operation guards....( )
2. Belts, pulleys, gears, shafts, etc.....( )
3. Maintenance & oil leakage....( )
4. _____( )

H. PRESSURE EQUIPMENT
1. Steam equipment.....( )
2. Air compressors.....( )
3. Gas cylinders and hoses.....( )
4. _____( )

I. UNSAFE PRACTICES
1. Improper lifting.....( )
2. Improper use of protective equipment.....( )
3. Horseplay.....( )
4. Running in aisles.....( )
5. Improper use of air hoses....( )
6. Removing machine guards.....( )
7. Work on unguarded machinery..( )
8. _____( )

J. FIRST AID
1. First aid kits.....
2. Stretchers.....
3. All injuries repo)
4. _____ _____( )

K. MISCELLANEOUS
1. Acids and .....( )
2. New proc .....( )
3. Dusts, mes.....( )
4. Ladd olds.....( )
5. __ _____( )

NO TRANSLATION

SIGNED_____

USE OTHER SIDE OF SHEET FOR DETAILED COMMENTS AND RECOMMENDATIONS

S-2.03

General Safe Practices

Safety rules have been developed to alert you to unsafe practices and conditions. These rules, in some cases, are common to all work. In other instances, they are specific to the particular task at hand.

It is important that you learn these rules and apply them to your Industrial Arts and other activities.

Safety Instructions for All Areas of Industrial Arts... S-3.01

Safety Rules for Power Tools..... S-3.02

Safety Rules for Hand Tools..... S-3.03

Safety Rules for Portable Electric Hand Tools..... S-3.04

Housekeeping..... S-3.05

Back Strains and Proper Lifting..... S-3.06

Safe Lifting Cartoon..... S-3.07

Materials Handling..... S-3.08

Personal Practices and Conduct..... S-3.09

Fire Control..... S-3.10

NO TRANSLATION

各工業藝術課之安全指示

1. 在有危險性的地方工作或操作機器前必先徵得教師准許.
2. 遇有傷害不論大小要馬上報告教師.
3. 法律規定要帶護眼鏡.
4. 假如你的髮型會防碍工作,你得把它束好或戴上頭罩.
5. 實驗室內要穿著合適的衣服,除去或束緊寬大的衣物,領帶或手飾,捲起衣袖.
6. 遵守有關操作者安全的規則.
7. 與你的班友合作以維護工業藝術之安全計劃.
8. 如學生有不安全之行動時得提醒他/她.
9. 如有任何儀器可能不能操作時得先報告教師.
10. 把工具和材料放在離枱角遠的地方.
11. 用掃去清理屑碎,用布去清理油漬的地方.
12. 保持地板和桌面清潔無雜物.
13. 有任何液体瀉在地上時得馬上抹乾淨.
14. 確知抽屜和門都關好.
15. 將油布及其他易燃材料放在認許之金屬罐內.
16. 操作大重或巨的材料時得小心.

Chinese Version

SAFETY RULES FOR POWER TOOLS

動力工具之安全規則

1. 在未有正式指示,不明白如何操作及教師未有准許時不要操作机器.

2. 在眼睛可能受到傷害的地方要戴合适的護眼鏡.

3. 請教師檢查你的工作裝置.

4. 在加上動力前要檢查及調整裝置.

5. 在開動前確知附近各人.

6. 讓零件在定位上及正常運転.

7. 開關机器後不要離去,要待其完全停止為止.

8. 除非需要一幫手否則只需一人操作机器.

9. 要留意一運転中的机器.

10. 在加油或清潔時要斷電.

11. 你的手,刀片,切刀及可転動的零件要保持安全距離.手指不要擺在有极切刀切割危險的地方.

12. 不要放工具器械或其他物品在机器内.

13. 保持机器四週及地板清潔免油体屑片,工具和其他材料.

14. 當你操作机器時要全神貫注,不能分心.

15. 永不要靠在机器上.

16. 不要用散綫作永久接電.

17. 當機器有破裂或失效時通知教師.

18. 當除去工藝品及裝置新机器前,任机器完全停止。

Chinese Version

SAFETY RULES FOR HAND TOOLS

手作工具之安全規則

1. 在眼睛可能受到傷害的地方要帶合适的護眼鏡.

2. 選擇适合大小和種類的工具,學習依序運用每一工具。

3. 切割工具一定要好好地磨利和保持好的情況.

4. 不要証手沾及油漬.

5. 小心運用利邊或尖銳之工具,小心保護你自己或其他人.

6. 用鉗具拿穩短少之物.

7. 永不要放工具在口袋内.

8. 用工具時要因材而用.

9. 不用鬆弛或破裂手柄之工具.

10. 打孔机和鑿子要每為保存銳口令做成傷害.

11. 只用有柄之銼子.

12. 不用銼子錘打以免破碎.

13. 不要以螺絲旋作指手棒.

14. 不要投机取巧以免做成傷害.所有扭轉器都因其大小力量比例而施用.

15. 不要用一硬錘打在另一硬面上.

16. 用完一工具後要清理好放回正當的保存地方.

17. 有破裂或失效時要通知教師.

S-3.03

Chinese Version

SAFETY RULES FOR PORTABLE ELECTRIC HAND TOOLS

手提電動工作工具安全守則

1. 用手提電動工作工具前一定要有教師的准許.
2. 插電前確知開關掣是否在"off"字位置上.
3. 操作任何手提電動工具時一定要帶護眼鏡.
4. 每一裝置的柄上的開關一定要保持不變的(死人型)壓力. 那就是當鬆掉壓力後便關去壓力.
5. 確知裝飾已穩固好.不要裝在濕的地方.
6. 不要穿着鬆大或寬型的衣服.移動中的零件可能會捲到它.
7. 在開動前確知你已拔機.工作間的四週沒有碍物.
8. 鋸鏈在常檢查看看有無缺裂.
9. 操作手提電動工具時过量的壓力會損害工具和做成意外.
10. 用工具前所有材料应适當地裝好.
11. 在開始前应檢查護罩,看看它們是否運轉正常.

HOUSEKEEPING

Good housekeeping is a key item in accident prevention. It takes the cooperation of all; it can't be the responsibility of the instructor and custodian alone.

An effective housekeeping program will:

1. Reduce exposures to slips and falls;
2. Reduce fire hazards;
3. Remind individuals of their responsibilities in keeping the laboratory clean and orderly;
4. Organize the housekeeping effort so that everyone assumes their fair share of the task.

Good housekeeping cannot be accomplished by an occasional grand cleanup. A program must be developed for continual cleanup. The following are essential in a good housekeeping program:

1. The equipment is arranged to permit safe and efficient work practices;
2. Materials and supplies are neatly and safely stacked;
3. Sufficient waste containers are provided and used;
4. Floors are clean;
5. Combustible materials are properly disposed of or stored in approved containers;
6. Excess materials and debris are not allowed to remain on benches and in the work areas;
7. Regular inspections are made to maintain clean and orderly conditions.

Items that are necessary for good housekeeping in an Industrial Arts laboratory are:

1. Adequate dust collecting system;
2. Suitable containers for scraps, shavings, chips and other waste material;
3. Adequate storage rooms, shelves, racks, and cabinets for materials and supplies;
4. Splash guards and collecting pans for all machines using oil and coolants;
5. Brooms, bench brushes, shop towels, and other clean

IT IS YOUR RESPONSIBILITY TO SEE THAT HOUSEKEEPING ...ENT AND SUPPLIES ARE PROPERLY USED.

NO TRANSLATION

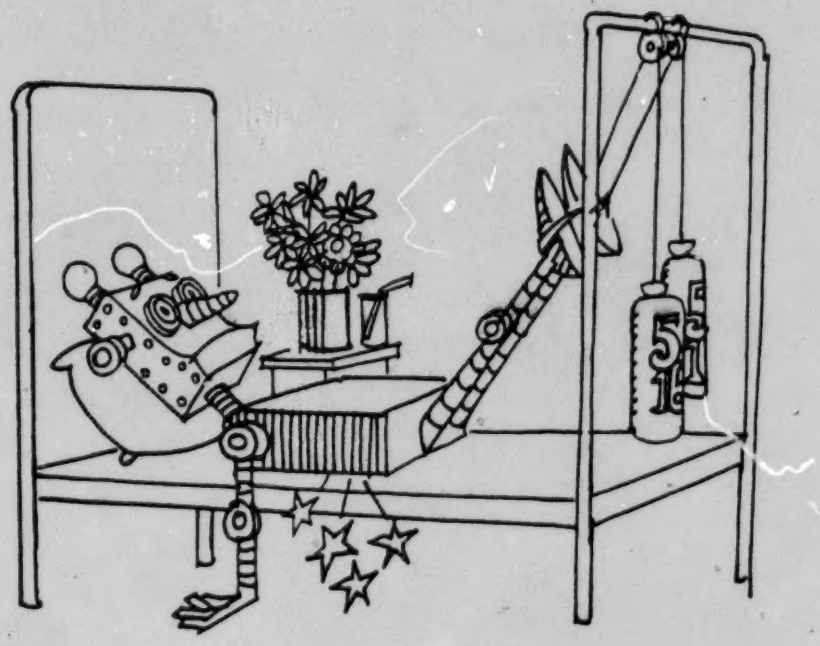
BACK STRAINS AND PROPER LIFTING

背痛和起重

由不當的起重做成的背痛，其所浪費的工作時間多於其他任何一類的傷害.

人力操作材料所做成的意外多為不良工作習慣所做成 —— 如不當的起重，攜帶过重的物件，不對的握法，及沒有穿着護身的覓備.

在任何安全計劃內正當的起重方法訓練是強迫性的.好的起重訓練可以防止很多背傷.



不當的起重會終身傷害你.請下頁學習正當的起重法.

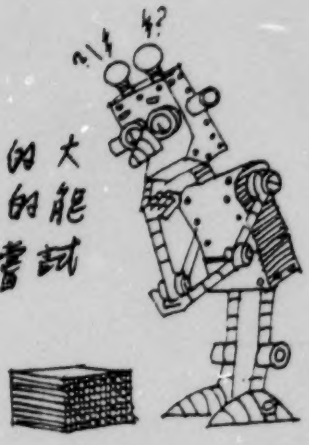
S-3.06

Chinese Version

安全起重法 Safe Lifting

1

量度一下物件的大小，如你對自己的能力有疑問，不要嘗試去提起它。



2

確定你已站穩，一腿可以前伸以保持平衡。

3

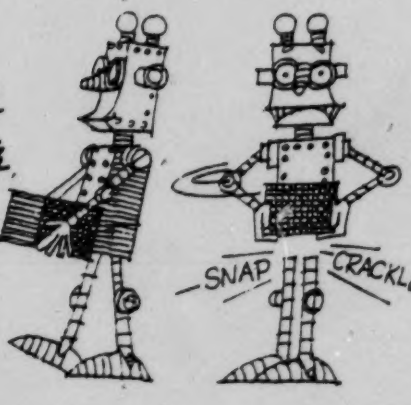
彎曲双膝作蹲踞，維持背部盡直盡好，散開和下垂双膝，靠近物件。

4

現開始用腿提起，維持物品靠近身体。

5

提起物品至可攜帶部位，不要搓曲身体，用步移法轉身。



6

在把物品放下時，彎曲双膝，保持背部平直，以物靠身，用臂力和腿力放下物品。

S-3.07

MATERIALS HANDLING

According to the National Safety Council, nearly one in four disabling injuries is directly related to materials handling activities. These accidents include such things as slips and falls while carrying objects, back injuries and hernias from improper lifting practices, chemical and heat burns from failure to use protective clothing or equipment, and mashed or amputated fingers or toes from dropped objects.

Some of the things you can do to reduce the chance of injury to yourself or others when handling materials are:

1. Use the proper aids to handle the materials, such as tongs for hot materials, block and tackle or jacks to lift extra heavy items, and blocks or wedges to keep items from rolling.

2. Don't try to lift heavy objects without help; before you lift make clear who is giving the orders.

3. Use proper lifting techniques (see Page S-3.07).

4. If the material is heavy or sharp use gloves or pads to assure a better grip or to avoid cuts. Be careful of splinters when handling lumber; wear gloves to handle rough lumber.

5. Before you pick up an object be sure that the path you intend to follow is clear.

6. With heavy objects, make a "first lift" before carrying it so that you can get the feel and position.

7. With long objects, such as pipe or ladders, have someone at each end so that they can be safely guided.

8. Be careful not to drop or set heavy objects on your feet or those of other people.

9. Stack materials so that there is no danger of slipping or falling during storage or removal.

NO TRANSLATION

PERSONAL PRACTICES AND CONDUCT

Accident prevention is up to you. There are certain basic rules of conduct that you should incorporate in your daily activities. These rules all involve your attitude toward your fellow worker as well as your attitude toward the task at hand. People with a poor job attitude are those that most frequently have accidents.

Orderliness is a desirable quality. Safe workers will have a methodical approach to the job. They will lay out tools neatly so that they are able to approach the project in an orderly manner. They will not clutter up their work area with excessive tools and materials.

A safe worker is a clean worker. Messy jobs require continual cleanup of the work area and frequently of the worker.

Horseplay in the laboratory will not be tolerated. Severe accidents often have occurred because individuals:

1. Threw items in the laboratory;
2. Ran in the laboratory;
3. Lacked consideration for others;
4. Directed compressed air toward others;
5. Played tricks on others -- hot metal, electrical shock, glue in pockets, etc.;
6. Did not adhere to the accepted safe practices of a laboratory environment.

NO TRANSLATION

FIRE CONTROL

The fighting of fires is normally left to professional fire fighters such as the local fire department, but the student should know how to extinguish fires.

Serious fires may occur in the Industrial Arts laboratory in spite of the efforts of everyone. Should this happen, the procedure will be:

1. Sound the alarm, both locally and to the fire department.
2. If a person's clothing is on fire, extinguish it. Water is most effective. Do not let a person with burning clothing run. (Melted, synthetic clothing can give serious burns if extinguished by rolling on the floor or using a blanket.)
3. Evacuate to a safe spot clear of the fire area and remain in a group so it will be easy to check for missing persons.
4. When the fire has been extinguished, clean up and protect wet or damaged equipment and materials. Be alert for rekindling of the fire.

Fires and Extinguishers

There are four principal classes of fires. No one extinguishing agent works well on all, although some work on most.

Class A: This is the most frequently found fire involving wood, paper, rubber and most plastics. Use water, chemical extinguishing solutions containing water, or Class A dry chemical (they crust and smother the glowing embers).

Class B: Flammable liquids are commonly used in the Industrial Arts laboratory and can be difficult to extinguish. Dry chemicals are most effective, followed by foam, inert gas, and water spray. A flammable liquid fire in a container can be extinguished by putting a lid on the container. Remember that the heat from a flammable liquid fire can quickly ignite wood or paper in the vicinity, making extinguishment more difficult.

Class C: This covers electrical fires. Remember that the first step in extinguishing an electrical fire is shutting off the power to the equipment that is on fire. Then extinguishers with a Class C rating may be used to complete extinguishment. It may be necessary to use water if the electrical fire has involved other combustible materials. AVOID USING WATER ON ELECTRICAL EQUIPMENT THAT IS NOT DE-ENERGIZED UNLESS IT IS APPLIED AS A FINE SPRAY, AND EVEN THEN CAUTION MUST BE TAKEN TO AVOID ELECTRICAL SHOCK FROM TOUCHING "LIVE" SURFACES.

Class D: Certain metals such as magnesium and aluminum may burn intensely. In general the extinguishing method involves excluding air and moisture with dry sand or a special metal fire extinguishing powder.

NO TRANSLATION

Safety Practices...Specific Processes and Operations

In spite of one's knowledge of general safety, alertness to potential hazards, or desire to "be safe", there are certain processes and operations that require specific knowledge in order to avoid injury.

Safety rules for specific areas are as follows:

Automotive and Power Mechanics..... S-4.01
Compressed Gas..... S-4.04
Drafting Room Safety Practices..... S-4.05
Dusts, Fumes & Combustible Metals..... S-4.06
Electricity/Electronics..... S-4.07
Flammable & Combustible Liquids..... S-4.08
Foundry Safe Practices..... S-4.10
Graphic Arts..... S-4.11
Plastics..... S-4.15
Soldering..... S-4.16
Storage Batteries..... S-4.17

Note to Teacher and Students: This guide is not intended to provide all of the instructional and safe practices information that students will need to know to successfully and safely participate in their Industrial Arts activities. Each instructor and student is expected to seek out and use additional instructional material. Highly technical information not available in the average text should be obtained by contacting specialists in the field.

Additional information on safety and hygiene may be obtained from:

Department of Labor and Industries
Division of Industrial Safety and Health
*P. O. Box 207, Olympia, Washington 98507

United States Department of Labor
Federal Office Building, Room 6048
909 First Avenue
Seattle, Washington 98174

University of Washington
Department of Environmental Health
Health Sciences Building
Seattle, Washington 98105

*Or the office of Labor and Industries nearest your school.

NO TRANSLATION

自動和動力机械 AUTOMOTIVE AND POWER MECHANICS

在修理自动机械的工業中"安全"不能過於強調.一個好的机械師就是一個安全的机械師.假如有一快捷或安全的工作方法.要用安全的法子.否則.你可能不能完成工作.

以下是一些你可能遇見的損坏和安全措施.

普通預防措施 General Precautions

1. 只有准許時才油滑或調整正転動中零件.
2. 當在風扇或帶附近工作時要小心.
3. 可能時.工作時机器開關要在"停止""OFF"位置上.
4. 只在机器停止時才束緊皮扇帶.
5. 當考慮机器和煖氣統是"熱"的"HOT".
6. 不要用開口的容器倾倒汽油於引燃机内.
7. 在焙焊机械時要特別小心——提供防火設備.
8. 不要直接在其他学生上面工作.
9. 在打開蓋子前要等放熱器冷卻才好.
10. 當操作机器時確知罩蓋已穩當地打開在正確位置上.
11. 當要拉机器時確知繩索都已适当地綁好.

個人健康之危險性 Personal Health Hazards

1. 當噴漆時要戴口罩.
2. 不要以溶油或汽油洗手.這些原料為爆炸性及會傷害皮膚.
3. 當必要從机器中提起零件時避免背部受傷.
4. 永不要把手放在喬布油射槍前.
5. 將受傷的地方穿着和蓋好.
6. 不要穿寬衣或首飾.

18-7-1 THIS TRANSLATION OF 7/21/78 SUPERSEDES ALL PREVIOUS TRANSLATION

譯文以英文原文為依据

S-4.01

千斤顶和起重机 Jacking and Hoisting

1. 假如有学生在下面不要升起车辆.
2. 在汽车下工作时一定要用千斤顶.
3. 当用千斤顶时避免过度的摇摆车辆.
4. 在学生开始在汽车下工作前要教师先检查千斤顶.
5. 变形的千斤顶柄会做成危险,应先把其拿走.
6. 不要用模糊千斤顶.
7. 当汽车已升起时不要发动机器.
8. 放下汽车时要小心.

工作时驾使及停位 Driving and Locating the Vehicle for Work

1. 在工场中驾使汽车时不要戴有限制视线的护目镜.
2. 汽车只应由有效驾使执照的学生驾使并要有教师之准许.
3. 修理汽车时不应把车位在繁忙的通道或公众通道上.
4. 拖和推车只能在教师准许时才能.
5. 当要把车停在拥塞地方时要有另一学生作引导.
6. 当引擎发动时,一定要有人坐在驾使座上.

油清油燃料及溶液 Greases, Oils, Fuels and Solvents

1. 马上清理和通风溢出燃料.
2. 只用准许的溶液去清理零件,不要用汽油.
3. 在发动引擎前确知有正当的通风设备.
4. 将油清的碎布放进准许的废物箱内.
5. 发动引擎前检查燃料接数点有無漏油孔.
6. 将易燃液体放在准许的密封容器内.

氣壓 Air Pressure

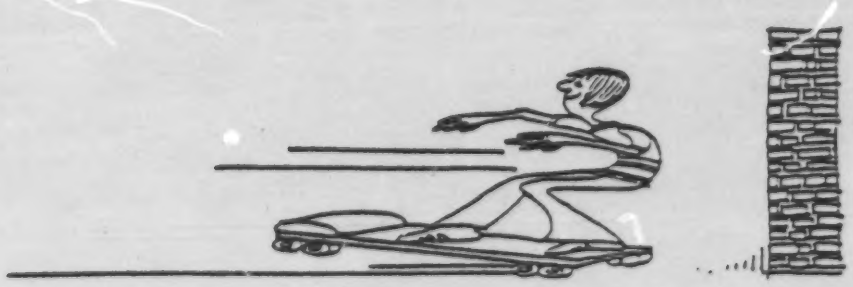
1. 當輪軸裝貨氣時用空氣計量器.
2. 當貨氣在有"SNAP RING"的卡車輪軸裝時,在把輪軸裝定位於一許可以範內.
3. 永不要把氣喉对着別的學生或你本人.

螺旋鉗和工具 Wrenches and Tools

1. 保存所有工具清潔和免於油漬.
2. 撿起地板上之工具.
3. 確知螺旋鉗已覺妥.
4. 其柄的鏈子不在使用.
5. 所用的工具要符合其設計使用 —— 永不要用來作槓桿.
6. 在不用時要把鐵鉤放在掛架上.
7. 不要用菱形頭的鑿子.

一氧化碳 Carbon Monoxide

一氧化碳為一有毒之氣体.其形成原因為汽油或其他燃料沒有完全燃燒當引擎転動時其為氣体狀況.雖然是一小量的一氧化碳在人身内都會做成致命傷.這就是為什麼那麼重要不要在很差的通風地方發動引擎.



S-4.03

壓縮氣体 COMPRESSED GAS

最常用來切割和熔焊的氣体為氧氣和乙炔,但是你亦可能會用氫氣,氮氣,Haap氣,氬氣,二氧二氟代甲烷,氨,丙烷(液化汽油),二氧化碳,或二氧化硫.

如要安全地使用這些氣体你要知道它們的特性和確知你用正確的瓶子.壓縮氣体的瓶子沒有特別的顏色記號! 受閱讀標記.

以最謹慎態度使用壓縮氣管.在每個管中有無比之威力.粗心的使用結果使到塞子或筒破炸而使你或你的朋友马上喪命.移動圓筒時使用手推車或輪子.

易燃氣体 Flammable Gases

乙炔,氫,丙烷,和Haap氣都是高度易燃氣.這些易燃氣体通常都用圓筒裝置.乙炔在丙酮中溶化(Haap氣和丙烷都在壓力下溶化),所以在用這些氣体時要特別注意把圓筒放直.

如與空氣或氧混合,它們會形成強力的爆炸.所以汽門,調節器,喉管,和其他裝備一定要緊密和好好地修理.當不用時關掉調節器和汽門!

將後備的氣筒放在一通風位置,用防火欄將其隔開——最好在外面.所有的氣筒一定要常放好和垂直地放.當存放或移動時,筒的蓋子一定要定位除非已穩放在輪車上學生不得移動筒管.

氧氣 Oxygen

為了工场用途,此氣氣自成一組.它會與很多的普通材器混合.在正確的情況時它會使材料猛力地燃燒及爆炸.在高壓時可會使汽油爆炸.永不要用油放在氧汽門或調節氣裝備上.

假如你摸圓筒.在打門汽門前常請教師檢查.

非燃氣体 Non-Flammable Gases

這些氣体包括氮氣,氫,二氧二氟代甲烷,氧,二氧化硫,和在高壓情況下,氧可能會燃燒.有些氣体無味,有些有強味(二氧化硫,氯).這些氣体对生命都至支持力,所以适當的通風設備最重要.在開始使用氣体時,先閱讀其特色及詳細安全預防措施及與你的教師商討此氣体之特性.

製圖室安全練習 DRAFTING ROOM SAFETY PRACTICES

雖然製圖室存在之危險性比較少，但以下之安全因素一定要顧慮到：

1. 製圖室中之切紙刀可能會帶來最重的割傷或史傷。大部份時間应安裝在固定的位置上，不用時，把它鎖好；切刀之保護柵不应離桌子寻英吋以上，不定但在操作者之手部及刀鉄中間，不要移去護蓋。

2. Ozalid 印紙和沖印紙，用要用氨，所以要特別注意安全指示。在氨主凝結狀燃燒時很毒，某只能主通風的地方操作。应告訴学生不要吸入氨氣，如氨散泊主皮膚上，应馬上用肥皂或清水洗淨。

3. 不正當之操作界盤，分切器，或硬鉛筆結果會使皮膚受傷，及由眼睛受傷引致血液中毒。

4. 碰和你坐的椅子或几子四脚着地，從転動中的椅子或几子跌下做成製圖室中主要的意傷問題。

5. 小心調整可調整的枱頂。

塵埃、氣體、和易燃金屬 DUSTS, FUMES AND COMBUSTIBLE METALS

在工藝實驗室中，有些人會對塵埃或氣体(燃燒金屬產生之碎粒)感到不適。有些碎片實有高度易燃性或爆炸性，其可能導致嚴重的或永久性疾病。

以下之四點為重要的防止室內爆炸之方法：

1. 用通風設備移去工作地點之塵埃。
2. 所產生之塵埃用吸塵机或掃帚移去。
3. 當生含產生塵埃之操作時戴防塵呼吸器
4. 在割切、熔焊或磨鍍鋅金屬前請教教師。

石綿塵很有危險性，當割切或打孔或磨作時要特別小心。當操作此類金屬材料時一定要穿戴呼吸器或護衣。

有些金屬如鎂等部是易燃的或不穩定的，不應用於工藝實驗室中。

當操作鎂或鋅時，不論是否燃燒、銲接、熔化、或机磨，一定要有通風設備。

電力和電子 ELECTRICITY/ELECTRONICS

1. 當銲接時要戴合適的護目鏡
2. 當銲接或分銲時，未不要輕擊溶化的焊
3. 直至以安全測驗方法判定為至要顧慮到所有的電線或插頭都是通電和熱的.
4. 不要拋擲開放去看其結果.
5. 換通電綠時關掉電源.
6. 當更換通電絲或軋碎机時確定燒毀的通電絲或線路的位置及原因.
7. 實驗性電路和電綫校正要為您好通電絲.
8. 只在電力停止後才更換電線.
9. 在要成和修理前移去或中斷電器.
10. 養確和要用已破之遠離地板上之導電体用一孤立之転換器.
11. 不要用已破的電器用品.
12. 高壓觸冰操作陰極綫管時養成把一手放立口袋內或在背後.
13. 在要用前確知電容器已無電.
14. 當操作陰極綫管時戴手套和面罩. 陰極綫管為極危爆炸性之危險物. 當操作陰極綫管時教師在場，陰極綫管在低空(真空氣)或破裂時會釀成爆炸，將破碎飛得很遠. 警告：陰極綫管在高電(約20,000弧). 如工作前不將其處穩會做成嚴重的電傷.
15. 當換作電器時不在戴金屬手飾，手錶，戒指，手錄等物.
16. 依照指示操作和存放電池.

容易起火和燃烧之液体 FLAMMABLE AND COMBUSTIBLE LIQUIDS

在很多工艺课中易起火和燃烧之液体是很重要的.它們一定要有高度的安全性去在放或用.
在用这些原料前常閱讀容器上之指標說明.

容易起火和燃烧液体有潛在之危險性因為:

1. 很多比空氣為重之蒸氣体聚落地板上或較低角落上,等待散落的火花.
2. 很多已經氧化,產熱,所以如棉物與其接觸便会隨之着火.
3. 全有傷害性结果之蒸氣会做成人体内之神經和/或排泄系統之傷害.
4. 假如吸入体内全部部有害.
5. 大部份毒氣会移主皮膚上之保護油,常接觸之结果会做成皮膚炎.
6. 每年全部都会猛力燃烧,条有适合之滅火儀器很難撲滅.
7. 當燃烧時,大部份的易燃液体都会產生濃煙使你在能救火前要逃离室内.

要很安全地在放和操作容易起火和燃烧之液体

1. 確知充氣抽風机/扇在易燃液体存藏室内運轉.
2. 只拿为夠當課所需用之份量.
3. 遵照教師指示将廢物或多餘材料放在有蓋之容器内.
4. 用漏斗倒液体入小的量器内.
5. 為上清理濕水和水滴,遵照指示處理布碎和廢料.
6. 閱讀和遵照指示操作和混合摧化剂時用樹脂.
7. 永不要将摧化剂倒回瓶中.
8. 當将摧化剂倒在樹脂中,不要将樹脂倒在摧化剂中.
9. 永不要将樹脂,油漆或其他完成原料用在割切,熔焊,機磨或其他熱的工作地.
10. 確知工作間通風良好.
11. 将容器料或廢料放在原裝容器或准許之罐内.
12. 當操作 epoxy 和 polyester 樹脂時戴膠手套減少皮膚感傷.
13. 立離開工作間時洗手及其他觸及之皮膚.

以下是一些有更大危险性的易燃液体，你今在实验中活动中遇到的。（按危险性大小顺序排列如下）：

Starting fluid 引燃油
**Aerosal cans 气雾溶胶
Gasoline 氧油
*Catalysts M.E.K. Peroxide 催化剂
Carburetor Cleaner 汽化器清洁剂
Acetone 丙酮
Lacquer and lacquer thinner 漆
Adhering liquid (for skin-screen process) 黏油
Paint thinner 油漆薄剂
Alcohol 酒精
Shellac 光漆
*Japan dryer 乾剂
Kerosene 煤油
Paint 油漆
Resin (polyester) 樹脂
Stain and varnish 染剂
Danish oil 丹麦油.

* 當與有機原料混合時這些原料会加速燃燒或猛烈反应.

** 視罐中所用之化學推進剂其得害危險性可能会有極大不同.

鑄造工場之安全練習 FOUNDRY SAFE PRACTICES

在鑄造工場內要常時遵守安全練習.不正確之操作溶化的金屬會做成嚴重的三級燒傷,使終身殘廢.

1. 當操作鎔化金屬時要穿着保護衣服.如安全眼鏡面罩,頸盔.圍巾.護脛,和石綿手套.不能穿着網球鞋.拖鞋.
2. 當假設以下工具為熱的:坩堝.細頸瓶.鑄件.及其他儀器.在拿起這些物品前確知其為熱否.
3. 關起模箱前.請教於教師去檢查.確知倒模時它不受过濕 —— 它會爆炸.
4. 將易如漆.溶液等易燃原料隔離鑄造工场.
5. 只在教師監督下點燃火炉.按時熟述商之指示.以下是普通可行之步驟:
   a. 打開工作間之通風扇.
   b. 打開火炉.让空氣流通二分鐘.
   c. 減少空氣对流.
   d. 在火炉內置一火炬
   e. 慢慢加油.如熄火,再用(a)法再点炉.
   f. 慢慢加强空氣流通
   g. 調整火焰使其燃於炉內.
6. 在移去坩堝前,關掉油,再關空氣,用坩堝井起器從炉中移去坩堝.
7. 搬送溶化金屬時儘量接近地板.用二人傾倒器.
8. 除減火砂外,隔離木,或易物於鑄造工場外.
9. 鑄造工場之地板在用砂保護着以防意外性由溶化金屬灑於地上所引起之爆炸.
10. 在鑄件時(Styrofoam),注滿鑄型口盤以防着火;打開工场之通風扇,不要吸入煙.
11. 在熱敷或二氧化碳敷倒模時.模型之兩边应紧穩.及以細頸瓶之青砂去散熱.不要吸入煙霧.

圖藝 GRAPHIC ARTS

有很多在圖藝科所用的器材和原料都是重的,尖的,脆的,或難以操作的.測量一下前作物之大小然後如有需要請別人幫助.記清器材之附有之精細特性,不要妄用損壞它.

以下是幾點圖藝間之安全顧慮

暗房 Dark Room

1. 在暗房時打開通風器.
2. 化學品不在存放玻璃板或高架上因其可能墮下做成傷害.
3. 當準備化學溶油時要戴化學護目鏡和圍巾.當將酸倒入水中,不要將水倒入酸中.
4. 當沖洗底片或混合化學品時要戴膠手套和鉗子.
5. 當沖洗底片或混合化學品時有敏感性的學生一定要帶手套.
6. 在暗房工作時學生手部要離開面部.
7. 沖洗底片後學生在小心洗手.
8. 在接近沉盤附近不在用手提式電器.
9. 在暗房內不得有不安全之行為.
10. 在馬上抹乾濕水.
11. 避免化學品沾在衣服上.這可能會做成皮膚不舒服.

乾框(溫來) Dry Mount

1. 學生在要小心避免被溫斗燒傷.
2. 乾框的熱度已由教師設定.
3. 工作完成後拔去溫斗之插頭.
4. 不要將熱的溫斗放在紙上或框台上,但手把它放回原架上.
5. 將壞的電綫和插頭告訴教師.
6. 不要用手去試溫斗之熱度

S-4.11

操作摄影机 Process Camera

1. 不要触摸热灯.
2. 避免用摄光灯对着学生眼睛.
3. 在玻璃框印板附近小心操作.

凸板印刷 Offset Press

1. 在调整,清理,加油,和清理積物前先把印機停止.
2. 在操作時不要伸手过印机.
3. 當發現印机机件失靈時应把它関掉.继续操作前告訴教師.不要自己去修理.
4. 操作印机的速度要遵要教師的指示.
5. 清理転动中之印机要特别小心.
6. 沒有教師之准許不得在印机上用工具.
7. 確知印刷時穿着在服对工作安全很重要.除去寬衣,領帶,或手飾.把衣袖捲至手肘上.
8. 假如你的頭髮可能令帶来危險性,你一定要把它束好.或戴護髮器.
9. 常保持地板整潔.

切格 (STRIPPING TABLE)

1. 所有材料不要接近玻璃因此不会打破.
2. 當切平物時手指離開切板地方.
3. 割切工具在妥为存放及保持銳利.

摺紙机 Folding Machine

1. 當机器在転动時不要嘗試去移走填塞的紙
2. 更改時停掉電源
3. 將所有工具移開摺紙机范外.
4. 確和電綠已被接去.

切紙机 Paper Cutter

1. 切刀已船由教師更換.
2. 除要被切的紙外任何東西都不要放在切格上.
3. 保持切格附近地板清潔.把切碎片放在廢紙箱中.
4. 在整個切紙过程中.將双手放在橫桿上.在双手離開橫桿前確和切刀在上位正確.
5. 永不要將舖子提高过刀片.

製板器 Plate Maker

1. 在更換碳紙或調整前停止製板器.小心熱的碳紙.
2. 操作時不要看圓光.
3. 小心不要把空心架的玻璃打碎.

紙孔机 Paper Drill

1. 提防打孔尖端是熱的.
2. 當打孔時將手離開打孔部位.
3. 常保持脚下乾淨.

空氣掃 Air Brush

1. 請教師接駁或停止高压綠的調整器.
2. 不要調整調整器
3. 小心不要噴在學生服上.

S-4.13

符號印刷 Sign Press

1. 不要撇或拉活字型.
2. 小心把手離開滾筒.
3. 只用特別之清潔劑去清理活字和印机.
4. 當清理時不提帶印机.

压印机 Platen Press

1. 當槓桿放下時将手離開压印机.
2. 在印刷時不要取出或調整紙章.
3. 遵照指示清理压印油墨和滾筒.

刻印 Engraving

1. 當刻印時一定要戴手套.
2. 不要将手放在切刀之下.
3. 教師會更換或調整刻印切刀.

自動溫度紀錄器 Thermography

1. 當燃燒凸板印粉時學生一定要帶手套.
2. 學生在工作間不　視熱力灯.
3. 在灯亮或凸板印粉在燃燒時不離開工作間.

塑膠印和金印 Rubber Stamp and Gold Stamping

1. 用燃燒原料時要小心操作
2. 保持工作面清潔
3. 不要撇或拉活字.

Chinese Version

塑膠 PLASTICS

1. 戴合適的護眼鏡.
2. 除非你已明白混合物之反应永不要混合任何東西.
3. 用通風設備.
4. 在生產或開先監之濃縮蒸氣,在操作此類原料時,不得使用陽火燃燒.
5. 穿合适之保護物,防止原料引起之皮膚不適 —— 如穿戴手套,和面罩等.
6. 當操作熱的塑膠時戴保護手套.
7. 當操作纖維素或其他會產生危險性塵埃之原料時戴面罩和呼吸器.
8. 將當作操作原料放在冰箱中.
9. 當每只操個用機時將所有護蓋定位.
10. 每只操個用機單位都有警告符號和保護.
11. 當用模具之工程師講之原料及程序去制定模過程.
12. 當清理或拆卸任何塑膠機器之工具時,遵照這些機器之安全規定.
13. 有些工具至少有一個正確存放地方.正確地處置所有易燃原料.
14. 有些化合產生大量的熱,這些東西只能在金屬容器內混合.
15. 常以催化劑加入樹脂內,不要把樹脂加入催化劑內.

S-4.15

Chinese Version

焊接 SOLDERING

焊接：用一种化合物连接两种金属在一起的过程。其会烧伤你自己或他人。你在记牢以下之安全指施：

1. 戴合适的护眼镜。
2. 在开始点把焊接炉前，确知煤气已开启。
3. 假如火炉没有自动灯：
   a. 以火柴或燃着之纸放入炉中。
   b. 慢慢打开煤气直至其燃烧。
   c. 调整火焰使其在炉内燃烧。
4. 在有良好通风设备下工作。
5. 不要在焊接过程中吸入煤雾。
6. 小心地从铜上移去多餘之铬化锌。
7. 马上清理溅落之铬化物。
8. 焊接后洗手，铬化物会烧伤皮肤或损害血物。
9. 如被酸烧伤，马上用水冲洗。
10. 小心防犯薄的金属的迅速停热。
11. 不要站在或在工作区的工作间内用电枪或铁器。
12. 用电焊枪或私缺乏时小心不要切断或煳着电线。
13. 清理工作间
14. 不要在有人会接触下时留下热的金属。

S-4.16

電池之儲藏 STORAGE BATTERIES

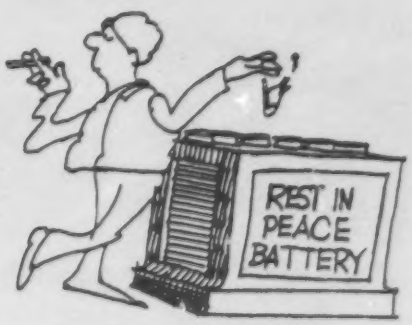
你最可能接觸到儲藏之電池為汽車電池.因其大之体積及其普通性.有時我們會在用電池時發於不小心.

以下是安全顧慮之規則

1. 電池之儲藏或充電只能在有良好通風設備下行之.不要吸入電池之酸氣.
2. 任何引起燃燒的原因都要遠離電池之儲藏地方;即是:不准吸煙,不准用火柴 不用工具相擊產生火花.
3. 在解電或充電時不要撐作電池.
4. 當處理電池時要着合适之保護衣服如膠手套,面罩,圍巾等.
5. 在電池附近不应帶金屬飾物,如戒指,手錶,或頸鍊.
6. 在電池充電間应有水龙头灑和洗眼盤.
7. 用做約之氨液,或碳酸納液,或多上用水可以中和洒落酸液.
8. 只在充電器已關妥及蓋好時才能接駁或除去電池充電器.

以下是一樣較嚴重之潛在危險:

1. 不适當接電引起爆炸.
2. 不对之處理会使酸液洒落.
3. 不适當之提升物件會傷背部.



Safety Practices ...Machines

Safety rules for the following machines are included in this section.

Buffer..... S-5.01
Drill Press..... S-5.03
Forge, Gas..... S-5.05
Grinder..... S-5.07
Jointer..... S-5.09
Lathe, Metal..... S-5.11
Lathe, Wood..... S-5.13
Milling Machine..... S-5.15
Planer-Surfacer..... S-5.17
Press, Offset Printing..... S-5.19
Sander, Portable Belt..... S-5.21
Saw, Band..... S-5.23
Saw, Portable Circular..... S-5.25
Saw, Radial Arm..... S-5.27
Saw, Scroll..... S-5.29
Saw, Table..... S-5.31
Shaper, Metal..... S-5.33
Shear, Metal Squaring..... S-5.35
Sheet Metal Machines..... S-5.37
Welder, Arc..... S-5.39
Welder, Oxy-Acetylene..... S-5.41

NO TRANSLATION

OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Buffer

SAFETY SUGGESTIONS

1. Always buff using the lower half of the wheel (below center).
2. Always wear eye protection when buffing.
3. Always stand to one side of the wheel when buffing and when applying compound.
4. Never use a rag to hold the work while you are buffing.
5. Use extra caution when buffing around corners, openings or areas where the wheel could grab and throw the work. Do not buff small diameter tubing, wires, chain or similar material.
6. Exercise caution so that the work does not overheat and burn your hands.
7. Be sure the area behind the buffer is open and that no one else is in the safety zone.
8. If your hairstyle presents a potential hazard, you must fasten it securely or wear a protective hair cover.
9. Remove or fasten any loose clothing, neckties or jewelry. Roll loose sleeves to the elbow.

Chinese Version

未得教師准許前不得操作此機器

磨輪 BUFFER

1. 磨光時常用磨輪之下半部(中央以下).
2. 磨光時常戴護眼.
3. 磨光或加入混合物時常站在磨輪之旁.
4. 磨時不要用碎布去拿被磨物.
5. 在磨角或其他有空隙的地方時特別小心, 因為輪子可能會挑出磨物.例如不要磨細小圓圈之鉄條.鎖鏈或其他類似物品.
6. 小心操作以防磨物過熱燙傷手.
7. 要確知磨輪後面無人站立安全區內.
8. 如果你的头髮.防碍操作可能會生意外.要把它束好或戴護髮.
9. 除去或束紧寬大衣服.領帶或珠宝.將寬大衣袖捲起.

BUFFER

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

1. A rag should be used to hold hot objects while buffing. T F
2. Always buff on the lower half of the wheel. T F
3. Loose clothing or hair must be confined. T F
4. Goggles must be worn when buffing. T F
5. Use extra caution when buffing corners or confined areas of the work. T F

Chinese Version

磨輪 BUFFER

學生姓名_____
班級_____
日期_____成績_____

安全測驗 SAFETY QUIZ

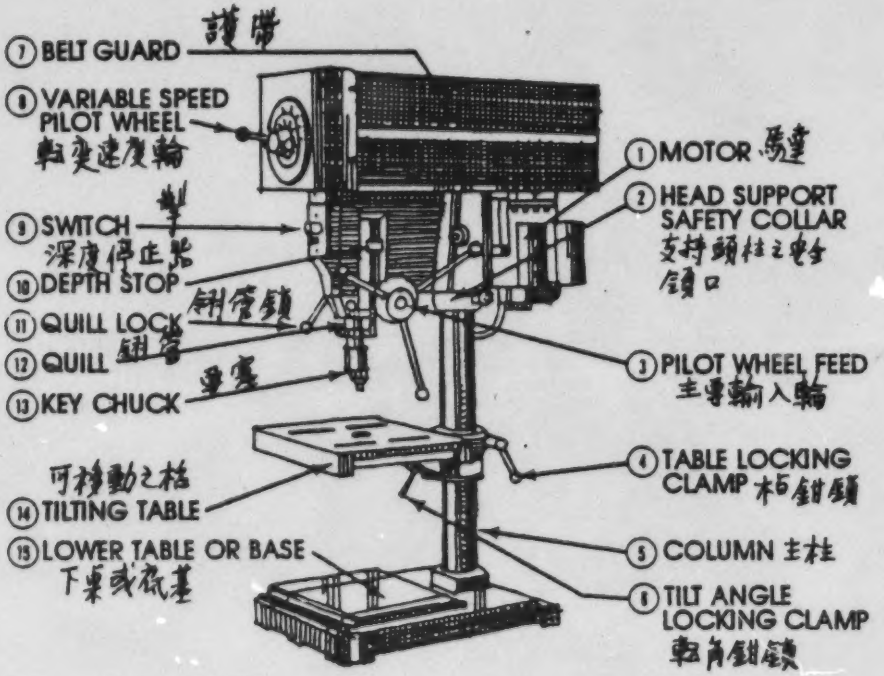
1. 磨物時要用布不要拿熱物 是 非
2. 磨光時常用磨輪之下半部 是 非
3. 寬大衣服或头髮要整理好 是 非
4. 磨光時一定要戴護目鏡 是 非
5. 在磨角或特別地方時得特別小心 是 非

OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Drill Press

SAFETY SUGGESTIONS

1. Wear appropriate eye protection
2. Remove jewelry - eliminate loose clothing - confine long hair.
3. Operate only when all guards are in place.
4. Select properly sharpened drill bit - tighten in chuck and remove key.
5. Clamp material - check for safety - turn on power.
6. If a piece of work is caught in the drill -- turn off power -- do not try to stop by hand.
7. Select speed carefully -- the larger the drill the slower the speed.


⑦ BELT GUARD 護帶
⑧ VARIABLE SPEED PILOT WHEEL 軸變速度輪
⑨ SWITCH 掣
⑩ DEPTH STOP 深度停止器
⑪ QUILL LOCK 鉗管鎖
⑫ QUILL 鉗管
⑬ KEY CHUCK 垂座
⑭ TILTING TABLE 可移動之枱
⑮ LOWER TABLE OR BASE 下桌或底基
① MOTOR 馬達
② HEAD SUPPORT SAFETY COLLAR 支持頭柱之安全鎖口
③ PILOT WHEEL FEED 主導輸入輪
④ TABLE LOCKING CLAMP 枱鎖頸
⑤ COLUMN 主柱
⑥ TILT ANGLE LOCKING CLAMP 軸角鎖鎖

S-5.03

未得教師准許不得操作此機器 鑽床

安全建議

1. 戴適當之護眼鏡
2. 除去手飾及寬大衣服,束起長髮
3. 當所有安全掣都安當時方可操作
4. 選擇適當的鑽嘴,緊緊木匙,拿去鎖
5. 檢查鉗之安全,發動馬達
6. 如某一物件零在打孔器內即熄掉機器,不要用手去停止馬達
7. 小心選擇速度鑽,鑽大的速度愈少

DRILL PRESS

Student Name_____
Class_____
Date_____ Grade_____

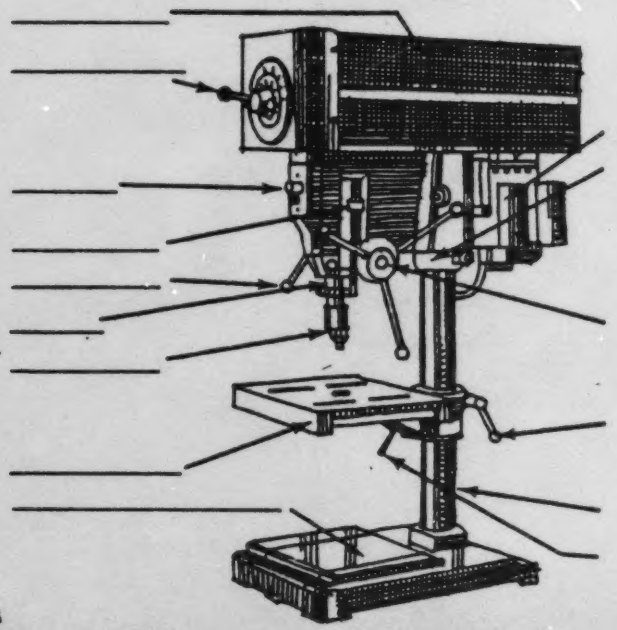
SAFETY QUIZ

1.	It is necessary to select the proper speed.	T	F
2.	The chuck key should be kept in the chuck at all times.	T	F
3.	Work should always be secured.	T	F
4.	Rings may be worn while operating a drill press.	T	F
5.	A chip brush should be used for removing chips.	T	F
6.	The drill should be operated at top speed for all work.	T	F
7.	The long end of the work should be at the left of the operator.	T	F
8.	Long hair must be confined in a hat or net, or tied back.	T	F

鑽床

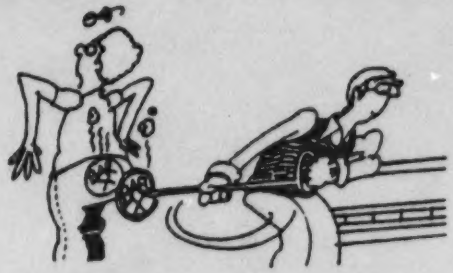
學生姓名_____
班級_____
日期_____ 成績_____

安全測驗		
1.	有必要去選擇適當的速度	是 非
2.	鑽頭鑰匙留在夾頭內	是 非
3.	機件要夾緊好	是 非
4.	操作鑽床時可以戴戒指	是 非
5.	可用掃刷清理碎片	是 非
6.	在任何操作時間內以最高速度操作鑽床	是 非
7.	工件之長末端應在操作者的左邊	是 非
8.	長髮束好在後面或束在帽子或髮網內	是 非



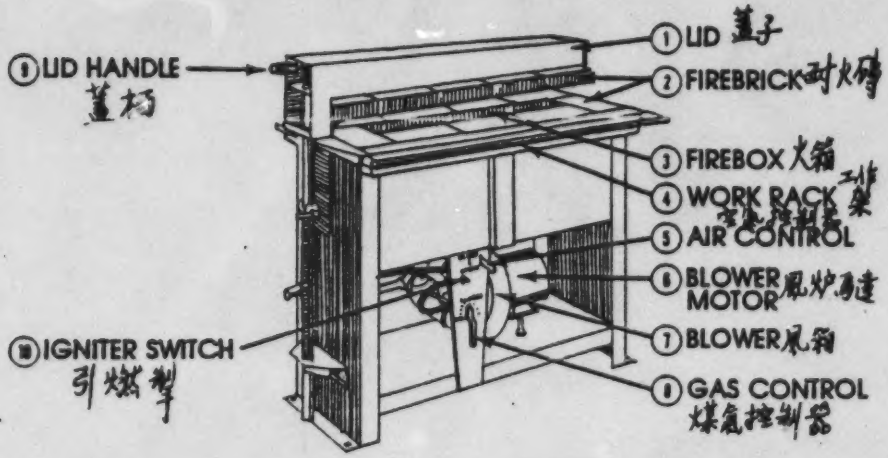
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Gas Forge



SAFETY SUGGESTIONS

1. Approved eye protection must be worn when operating forge.
2. Asbestos mittens (gloves) must be worn when the tongs cannot be used.
3. A pail of water should be nearby at all times.
4. Hot metal left unattended should be marked "HOT" with chalk.
5. The top must be open when lighting the forge.
6. When shutting down, the gas control should be turned off first.
7. Be sure gas is off "tight" when leaving the forge.



S-5.05

Chinese Version

煤气熔炉

安全建议

1. 当操作熔炉时要戴面罩.
2. 如不能用钳子时一定要带手套.
3. 随时在工作地点附近放一桶水.
4. 热的金属一定要用粉笔写上"热"字 "HOT".
5. 当引燃熔炉时要打开盖顶.
6. 当熄火时要先关闭去煤气控制器.
7. 在离开熔炉时要确知煤气已关紧.

GAS FORGE

Student Name_____
Class_____
Date_____ Grade_____

煤氣熔爐

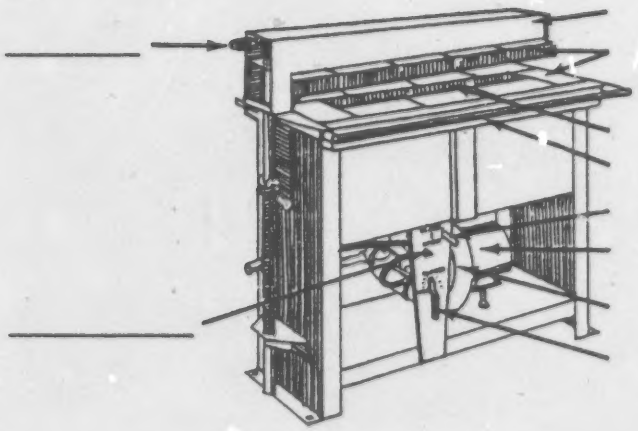
學生姓名_____
班級_____
日期_____ 成績_____

SAFETY QUIZ

1. Tongs should be available for the handling of hot metal. T F
2. Gloves should be worn when handling the tongs. T F
3. The top slot should be closed when lighting the forge. T F
4. The air should be turned off first when shutting down. T F
5. Hot metal should be marked "HOT". T F

安全測驗

1. 操作熱的金屬時得要用鉗子 是 非
2. 用鉗子時应要戴手套 是 非
3. 當熔炉的要開掉蓋頂 是 非
4. 當熄火時先要把空氣閉掉 是 非
5. 熱的金屬应寫上「Hot」字. 是 非

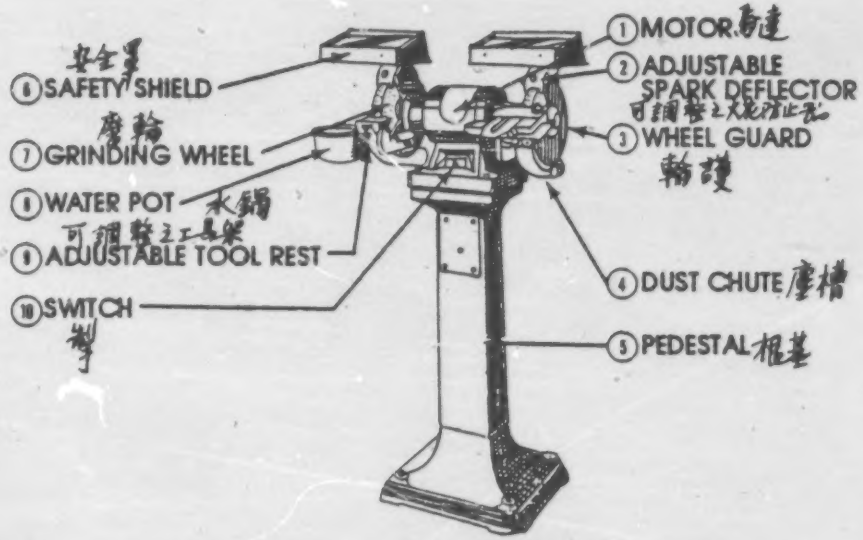


OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Grinder

SAFETY SUGGESTIONS

1. Eye protection must be worn at all times.
2. All guards must be properly adjusted.
3. The tool rest must be adjusted to 1/8" from the wheel.
4. Do not grind on the side of the grinding wheel.
5. Spark deflector or top guard must be within 1/8" of wheel.
6. Small pieces should be held with "vise grip" type pliers.
7. A wheel that is excessively worn or cracked should be discarded.
8. The glass safety shield should be clean.
9. Stand to one side when starting the machine.



S-5.07

Chinese Version

未得教師准許前不得操作此机器　　砂齒磨器

安全建議

1. 帶戴護眼鏡
2. 調整好全部之護罩
3. 把工具調整到離輪子 1/8英吋
4. 不要用輪邊磨物
5. 火花防止器或頭護一定要距離輪子 1/8英吋內
6. 要用 VISE GRIP 型鉗子操作細小物体
7. 一個通用或殘舊的磨輪不被應用
8. 安全玻璃罩一定要清潔
9. 啟動機器時要站在一邊

GRINDER

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

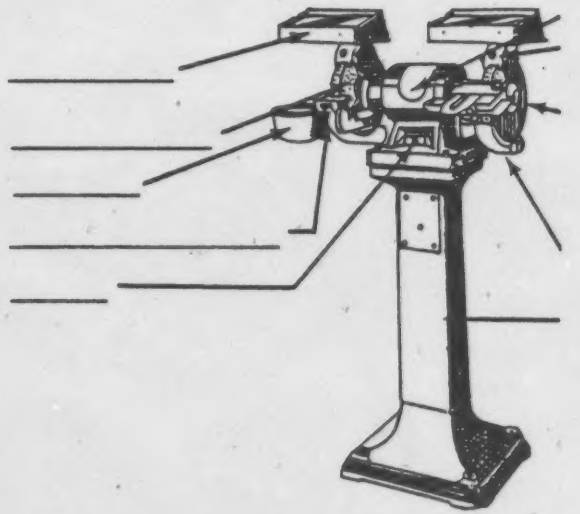
1. The tool rest should be adjusted to within 1/2" of wheel. T F
2. Eye protection is not always necessary while grinding. T F
3. Once the "off" switch is in the off position, the operator may leave. T F
4. The safety shield should be clean. T F
5. Wheels that are out of balance may be used. T F
6. The spark arrestor is not necessary if there is a glass safety shield. T F
7. When grinding a small piece of steel, "vise grips" are advised. T F
8. If there is a glass shield, eye protection is not required. T F

钉齿磨器

學生姓名 _____
班级 _____
日期 _____ 成绩 _____

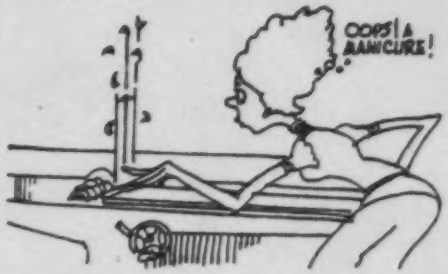
安全测验

1. 工具架应调整到离轮子1/2英寸. 是 非
2. 在磨时不须要常戴护眼镜. 是 非
3. 当開關在"OFF"(關)位置上时操作者便可离開. 是 非
4. 安全罩要清潔. 是 非
5. 不平衡的轮子尚可使用 是 非
6. 如有安全玻璃罩便不必用火花防止器 是 非
7. 当磨细少钢物时最好用 VISE GRIPS 鉗子.



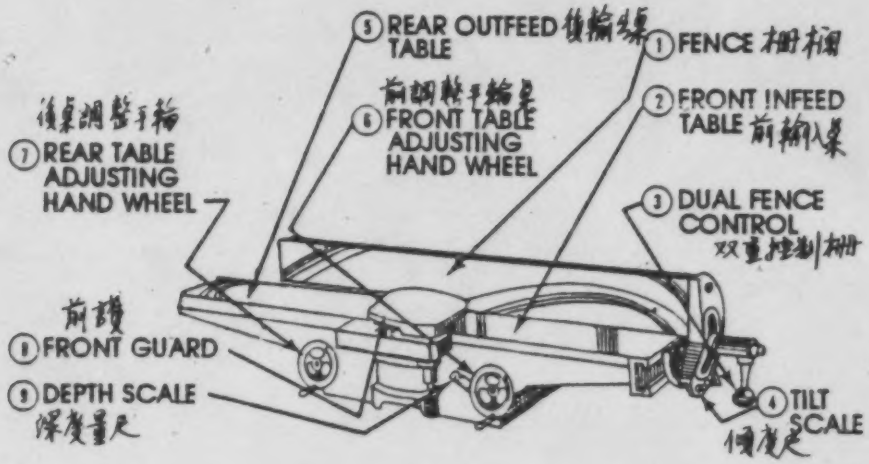
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Jointer



SAFETY SUGGESTIONS

1. Before starting, make sure that guards are free and will cover the blade at all times.
2. A push stick must be used on all material that would bring the hands within 2" of the cutter.
3. An assistant should help support long pieces.
4. Several light cuts are safer than one heavy cut.
5. Wear eye protection.
6. The board being jointed must exceed the minimum length established for that particular machine (check with instructor).


5 REAR OUTFEED TABLE 後輸送
1 FENCE 柵欄
6 FRONT TABLE ADJUSTING HAND WHEEL 前調整手輪
2 FRONT INFEED TABLE 前輸入桌
7 REAR TABLE ADJUSTING HAND WHEEL 後桌調整手輪
3 DUAL FENCE CONTROL 双重控制柵
8 FRONT GUARD 前護
9 DEPTH SCALE 深度量尺
4 TILT SCALE 傾度尺

S-5.09

未得教師准許不得用此機器

連接器

安全建議

1. 在發動機器前,確知護罩能自由地蓋着刀片.
2. 所有材料得用推板推到離切刀 2 吋地方.
3. 長的物件在有一舉手扶着.
4. 能 3 個切割多次比大切來得安全.
5. 戴護眼鏡.
6. 連接板一定要比機器的最短長度為長(請示教師)

JOINTER

Student Name_____
Class_____
Date_____Grade_____

連接器

學生姓名_____
班級_____
日期_____成绩_____

SAFETY QUIZ

安全測驗

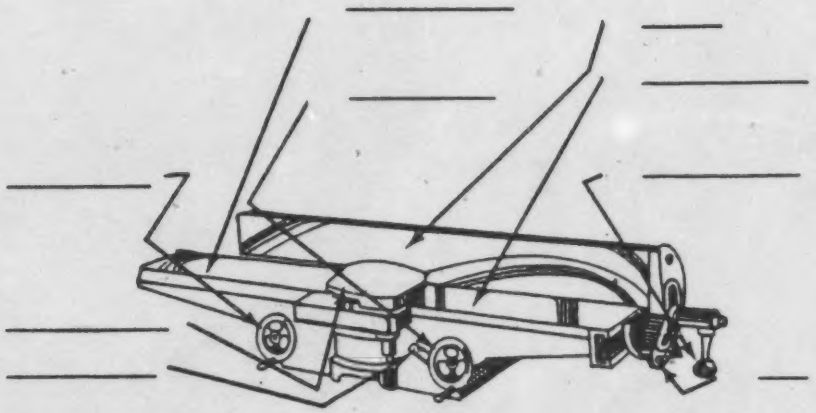
1. It is possible for the guard to stick and not cover the cutter. T F
1. 護罩可能會卡穿而不蓋着切刀. 是 非

2. A push stick should be used when the hands could get close to the cutter. T F
2. 當手不能接近切刀時需用一推板. 是 非

3. Eye protection is not necessary when operating a jointer. T F
3. 當操作連接器時不必要戴護眼鏡. 是 非

4. Permission should be obtained before using the jointer. T F
4. 操作連接器前应得准許. 是 非

5. Stock shorter than 6" may be processed on the jointer. T F
5. 短於6英吋的器材可以用連接器去處理. 是 非

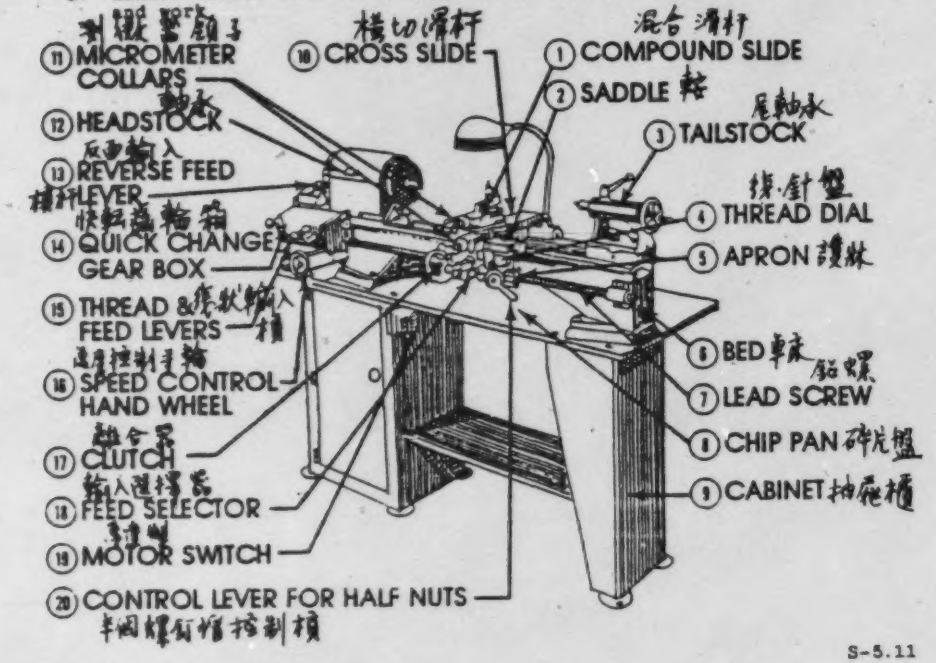


OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Metal Lathe

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Remove jewelry, eliminate loose clothing and confine long hair.
3. Do not leave the machine until it has stopped.
4. A brush should be used to remove chips.
5. The chuck should be turned by hand before starting.
6. Never leave chuck wrench in chuck.
7. Stock should be balanced and secured before starting.
8. Operate at the correct speed for the job.
9. Handle chucks with care; keep hands away from moving parts



S-5.11

Chinese Version

安全建議 未得教師准許不得操作此機器

金屬車床

1. 戴護眼鏡
2. 除去手飾寬衣束好長髮
3. 機器未足止前不要離去
4. 用掃去清除碎片
5. 開動前用手轉動夾柱(掛子)
6. 不要讓夾柱扭留在夾柱內
7. 開動前操作物要平行和緊固
8. 以正當速度操作
9. 小心操作夾柱手部要離開轉動中的零件

METAL LATHE

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

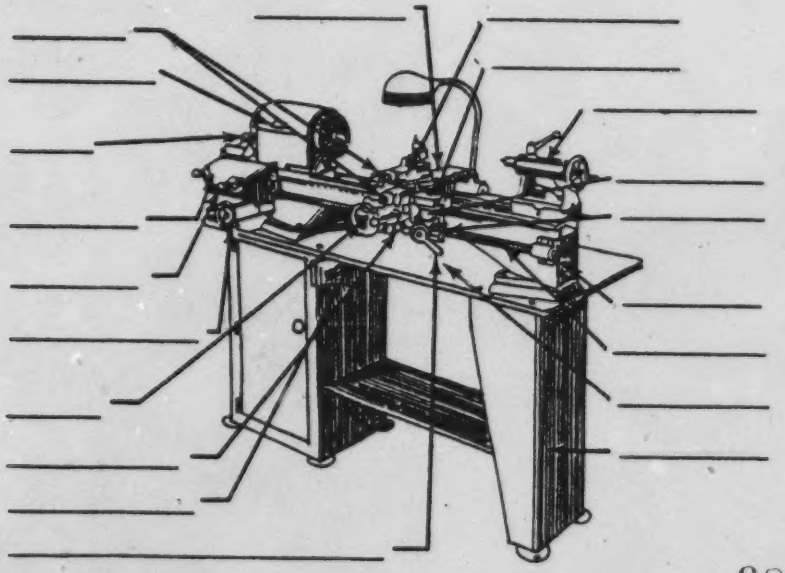
1.	A brush should be used for removing chips.	T	F
2.	The tail stock need not be secure to the bed.	T	F
3.	The chuck wrench remains in the chuck when the machine stops.	T	F
4.	It is safe to turn machine by hand before starting.	T	F
5.	Measurements should be made while the machine is stopped.	T	F

金屬車床

學生姓名_____
班級_____
日期_____成績_____

安全測驗

1.	要用掃去清除碎片.	是	非
2.	尾承軸不須要緊在車床上.	是	非
3.	當機器停止時夾柱扳應留在夾柱內.	是	非
4.	開動前用手去轉動機器是安全的.	是	非
5.	當機器停止時便可以量度大小直短.	是	非

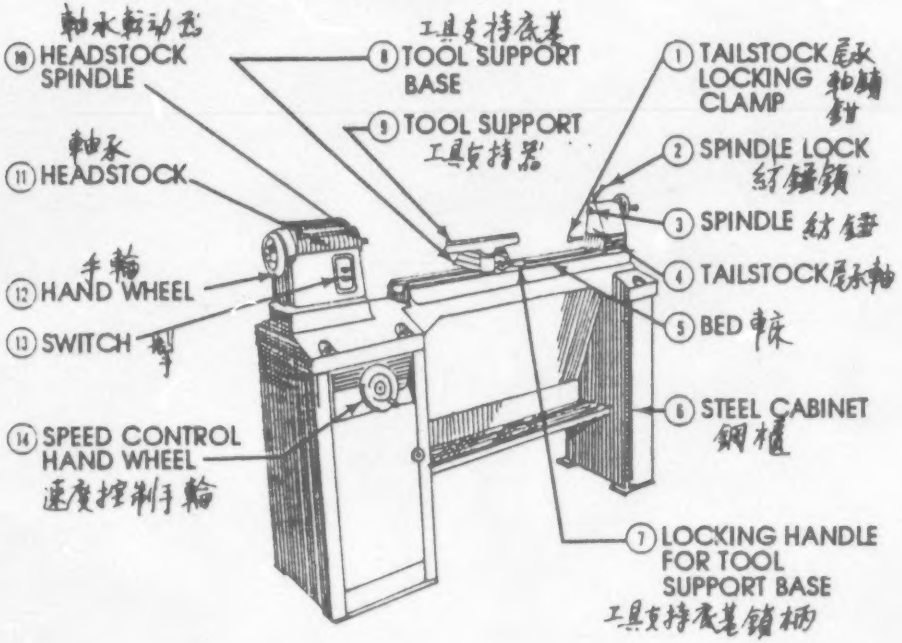


OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Wood Lathe

SAFETY SUGGESTIONS

1. Eye protection must be worn.
2. The tool rest must be close to the work when cutting tools are being used.
3. The cutting tools must be kept sharp.
4. Do not feel for smoothness of work while machine is running.
5. Work must be centered, balanced and secured.
6. The tool rest must be removed while sanding.
7. Examine setup before turning on power.
8. Shut off power while cleaning machine.
9. Long hair and loose clothing must be appropriately confined.


⑩ HEADSTOCK SPINDLE 軸承轉动器
⑧ TOOL SUPPORT BASE 工具支持底基
⑨ TOOL SUPPORT 工具支持器
① TAILSTOCK LOCKING CLAMP 尾承軸鎖鉗
⑪ HEADSTOCK 軸承
② SPINDLE LOCK 紡錘鎖
③ SPINDLE 紡錘
⑫ HAND WHEEL 手輪
④ TAILSTOCK 尾承軸
⑬ SWITCH 掣
⑤ BED 車床
⑥ STEEL CABINET 鋼櫃
⑭ SPEED CONTROL HAND WHEEL 速度控制手輪
⑦ LOCKING HANDLE FOR TOOL SUPPORT BASE 工具支持底基鎖柄

S-5.13

未得教師准許前不得操作此機器　　木車床

安全提議

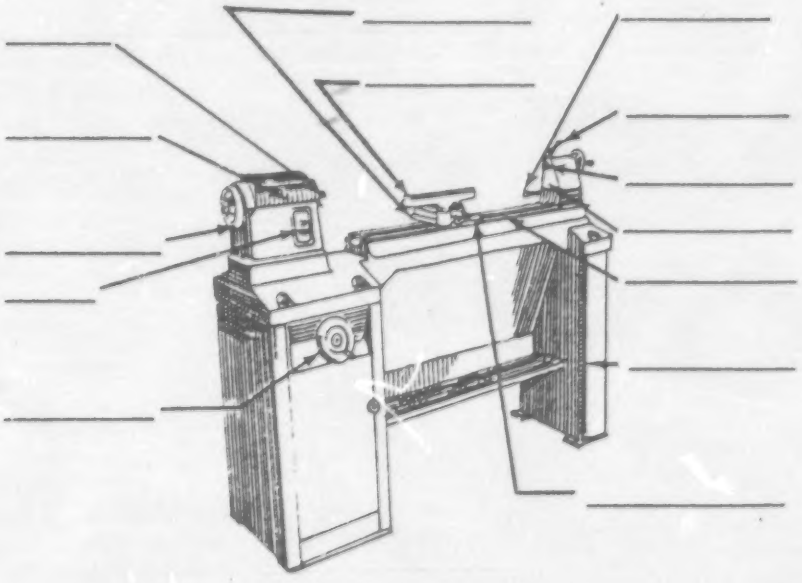
1. 戴護眼鏡
2. 當切刀時工具一定要靠近勞作物
3. 切割工具一定要保持銳利
4. 當机器在轉動時不要用手去摸滑度
5. 勞作物一定要放好在正中和平衡
6. 當用沙紙磨滑時工具要拿走
7. 發動馬達前一定要檢查覺倍
8. 當清理機器時要關掉馬達
9. 長髮和寬衣一定要適當地束好

WOOD LATHE

Student Name _____
Class _____
Date _____ Grade _____

SAFETY QUIZ

1. The speed of the machine is not important for safe operation. T F
2. A space of 1" is safe between the tool rest and the work. T F
3. Eye protection is not necessary during operation. T F
4. Dull tools may be used. T F
5. It is safe to feel for smoothness while turning. T F
6. The tool rest should be removed while sanding. T F
7. It is safe to turn work that is not balanced. T F
8. Long sleeves may be worn while operating. T F
9. The cutting tools should be held loosely. T F
10. The hair should be confined while operating the machine. T F



S-5.14

木車床

學生姓名 _____
組別 _____
日期 _____ 成績 _____

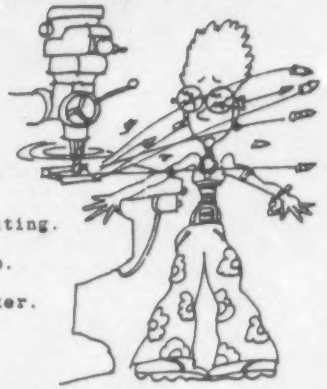
安全測驗

1. 機器的速度對操作之安全不重要. 是 非
2. 工具架與工作物之間1吋距離是安全的. 是 非
3. 操作時不必要戴護眼鏡. 是 非
4. 可以用鈍的工具. 是 非
5. 在机器轉動時去感覺滑度是安全的. 是 非
6. 在磨沙時在把工具架拿去 是 非
7. 操作不平衡的工作物是安全的. 是 非
8. 操作時可穿長袖衣服. 是 非
9. 應該把持着切具. 是 非
10. 當操作機器時應束起長髮. 是 非

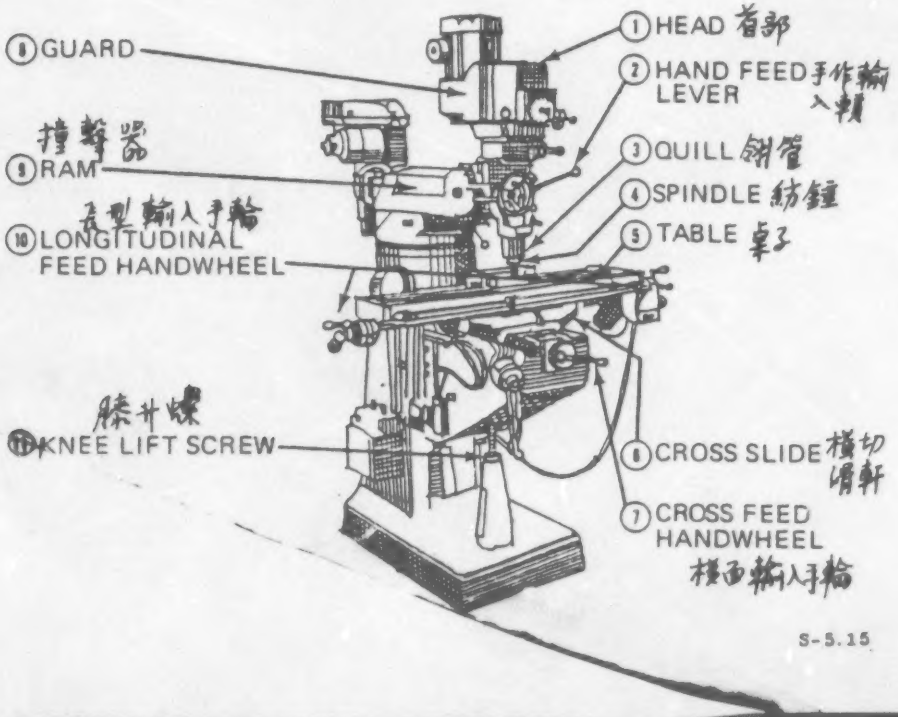
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Milling Machine

SAFETY SUGGESTIONS



1. Make adjustments and measurements only when the machine is at a complete stop.
2. Material being machined must be properly secured.
3. Make sure the cutter is rotating in the right direction. Feed against the cutter unless the machine is capable of climb cutting.
4. Handle cutters carefully as they are sharp.
5. Keep fingers a minimum of 6" from the cutter.
6. Take care to prevent jamming the vise or the work into the column, cutter, etc.
7. Start your own machine and remain with it until you have turned it off and it has come to a complete stop.
8. Never clean chips away from cutter while machine is running.
9. Eye protection must be worn.



S-5.15

未得教師准許不得用此機器　　旋削機

安全建議

1. 只有在機器完全停止時才調整和量度
2. 操作材料一定要適當地裝好
3. 確知切刀朝正確方向運転除非机器可以攀切否則對着切刀輸入
4. 切刀銳利小心運用
5. 手指要離切刀最少 6 吋
6. 小心不要証勞作物挽塞在機械的柱子切刀等地方
7. 發動你自己的機器後不要離開直至你把機器關好和完全停止
8. 當機器轉动時不要清理碎片
9. 一定要帶護眼鏡

PLANER-SURFACER

Student Name _____
Class _____
Date _____ Grade _____

SAFETY QUIZ

1. On long cuts it is permissible to leave the machine while on automatic feed. T F
2. Cutters should be stored loosely on the work bench. T F
3. Eye protection should be worn at all times. T F
4. Swarf chips can be wiped away with the hands. T F
5. The automatic rapid feed should not be used when the stock is closer than 6" from the cutter. T F
6. Handles should be disengaged when on automatic feed. T F

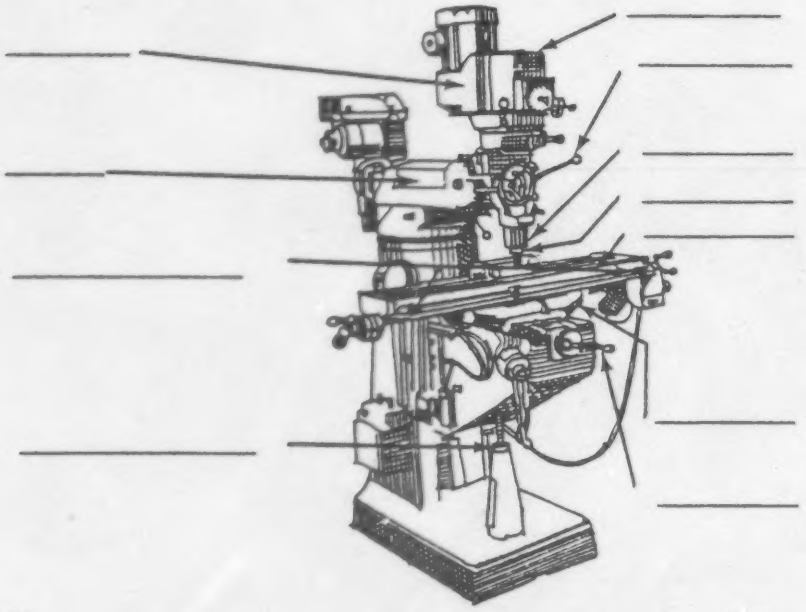
Chinese Version

旋削機

學生姓名 _____
級別 _____
日期 _____ 成績 _____

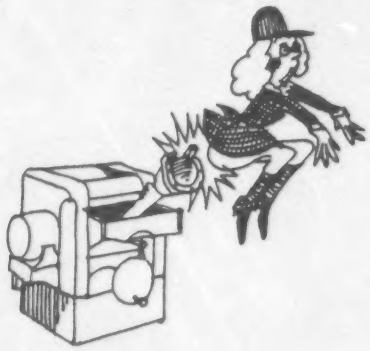
安全測驗

1. 當机器在自动输入時可放准離開 是 非
2. 切刀应装入吧放在工作台上 是 非
3. 常戴護眼鏡 是 非
4. 小碎片可用手抹去 是 非
5. 當工作物在距切刀 6 吋時不得使用自动输入 是 非
6. 當自动输入時柄子应除去 是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Planer-Surfacer



SAFETY SUGGESTIONS

1. Approved eye protection must be worn.
2. A "backer board" should be used when planing thin stock.
3. Do not force material through planer.
4. Do not remove chip accumulation while machine is running.
5. Do not stand directly behind the machine or in the line of kick back.
6. Do not look into the throat of the surfacer when it is running.
7. Be sure to select the proper speed and depth of cut.
8. The board being surfaced must exceed the minimum length established for that particular machine (check with instructor).

Chinese Version

未得教此准許不得操作此機器

捎平機

安全提議

1. 一定要戴適當的護眼鏡
2. 當設計薄木要用支撐板
3. 不要用力把材料推過捎平机.
4. 在机器未停止時,不要清理堆積的木碎
5. 不要直接站立在机器後面
6. 當転動時不要靠着捎平机之喉部
7. 確知選擇制切的正確速度和深度
8. 切板的平面一定要超过最低的特別設計机器的長度

Chinese Version

PLANER-SURFACER

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

1.	Instructor's permission is required to operate the machine.	T	F
2.	Eye protection is required to operate machine.	T	F
3.	Chips may be removed while machine is running.	T	F
4.	It is safe to plane wood with loose knots.	T	F
5.	If material becomes stuck, it is safe to stop machine.	T	F
6.	Line of sight should be through the throat of the machine.	T	F
7.	Assistance should be obtained when planing long pieces of wood.	T	F

S-5.18

刨平機

學生姓名_____
級別_____
日期_____成績_____

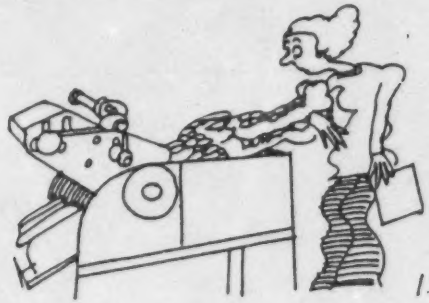
安全測驗

1.	操作机器一定要得教師准許	是	非
2.	操作机器一定要戴護眼鏡	是	非
3.	机器転動時可以清理屑片	是	非
4.	用裂扣去刨木是安全的	是	非
5.	如果材料死在机内停止机器是安全的	是	非
6.	視線应经过机器的喉部	是	非
7.	當刨長木時要有幫手	是	非

OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Offset Printing Press

未得教師准許不得操作此機器　　平板印刷機

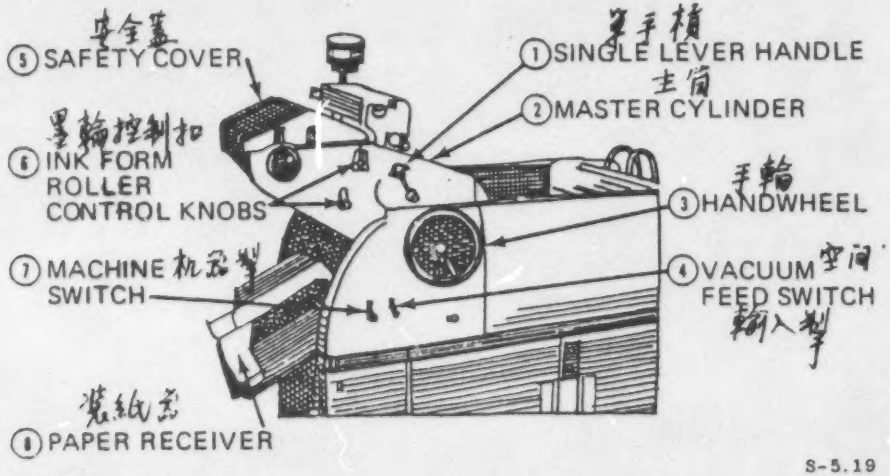


SAFETY SUGGESTIONS

1. Operate the press only when all guards are in place and properly adjusted.
2. Never reach for misprinted or dropped paper while the press is in operation.
3. Do not make internal adjustments while the press is in operation.
4. Do not clean the press while it is in operation.
5. The instructor should determine the operating speed.
6. Never reach across the press while it is in operation.
7. When finished with the press, it must be clean and all paper, equipment and tools must be returned to proper storage.

安全建議

1. 當所有的護蓋都裝好和調整好才開始操作印刷.
2. 當印刷時永不去取印錯的或落的紙張.
3. 當操作時不要作內部調整.
4. 當印刷時不要清理.
5. 教師應決定操作速度.
6. 當操作時不要伸手過機器.
7. 印刷完後,一定要清理全部紙張,機器和工具一定要好好放回原位.



S-5.19

OFFSET PRINTING PRESS

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

1. The gears need not be covered while the press is in operation. T F

2. The machine must be stopped before misprinted or dropped paper is removed from the press. T F

3. Final adjustments may be made while the machine is running. T F

4. You should be alert to keeping others away from the press while it is in operation. T F

5. It is safe to reach across the press when it is operating. T F

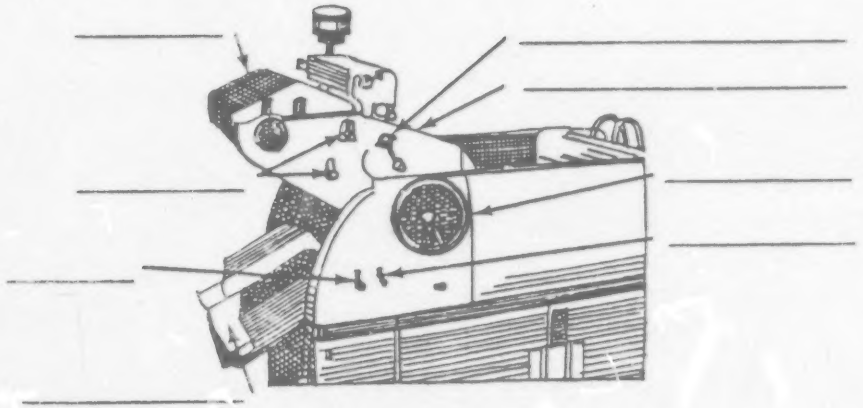
Chinese Version

平板印刷機

學生姓名_____
級別_____
日期_____成績_____

安全測驗

1. 當印刷時不必要蓋着齒輪 是 非
2. 在清除印錯的或跌落的紙張時一定要停止机器 是 非
3. 當机器運轉時可給最終調整 是 非
4. 小心操作時無人站在旁附近 是 非
5. 操作時伸手过機器是安全的 是 非



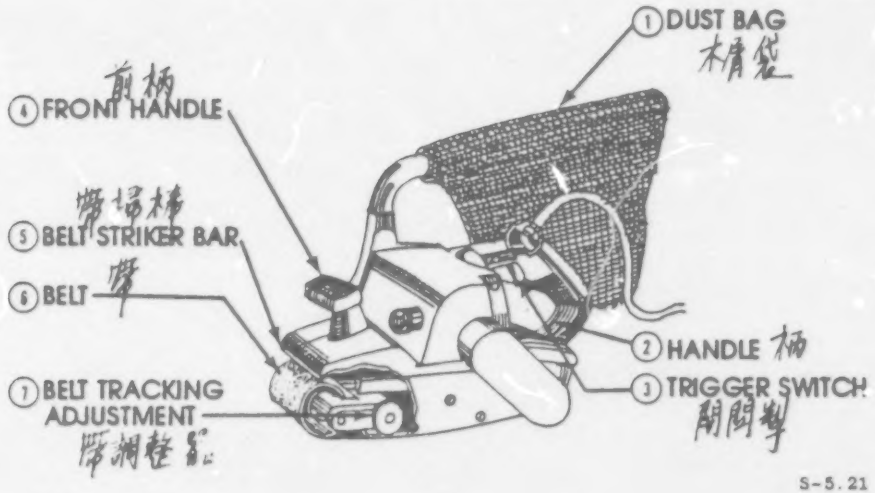
S-5.20

OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Belt Sander

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Check to see if belt is properly installed and in good condition before starting.
3. Start sander above work; let rear of belt touch first.
4. Keep the electrical cord clear and the dust bag away from the sander belt.
5. Lift sander off the work before stopping.
6. Wait until belt is completely stopped before placing sander on bench.
7. Empty dust bag daily into proper waste container.



S-5.21

Chinese Version

磨帶

安全建議

1. 戴合適的護眼鏡.
2. 開動前檢查帶是否適當地裝好及完備.
3. 在工作物上落沙磨帶之後部先接觸.
4. 保持電動帶清潔及木屑袋距離磨沙帶.
5. 在停止前先把工作物自磨沙器上提起.
6. 放磨沙器在櫈上前得待帶完全停止.
7. 每日清理木屑袋至廢物容器內.

BELT SANDER

Student Name _____
Class _____
Date _____ Grade _____

SAFETY QUIZ

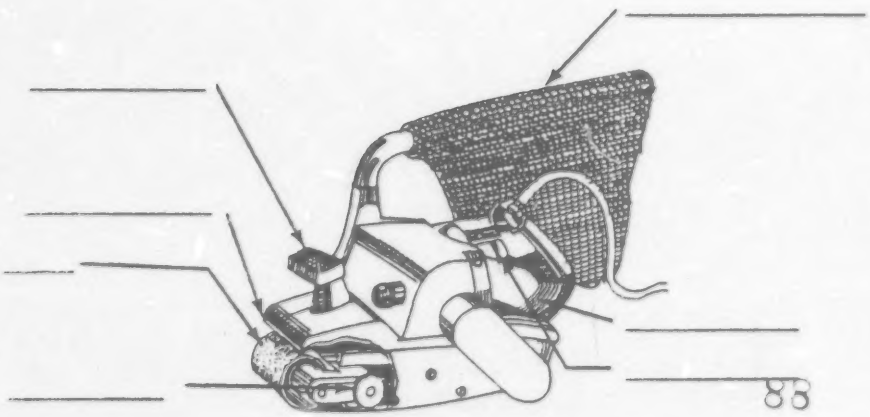
1. Eye protection is required when using this machine. T F
2. You should have a firm grasp on the sander before starting. T F
3. The sander should rest on work when starting. T F
4. A wood sander should not be used on steel. T F
5. This machine should be examined before starting. T F

磨沙帶

學生姓名 _____
级别 _____
日期 _____ 成绩 _____

安全測驗

1 用此機器時要戴護眼鏡 是 非
2 開動前你要拿穩磨沙器 是 非
3 當開始時磨沙器应放在物件上 是 非
4 木磨沙器不应用在鋼鉄上 是 非
5 開始前应檢查此机器 是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Band Saw

Chinese Version

未得教師准許不得操作此機器

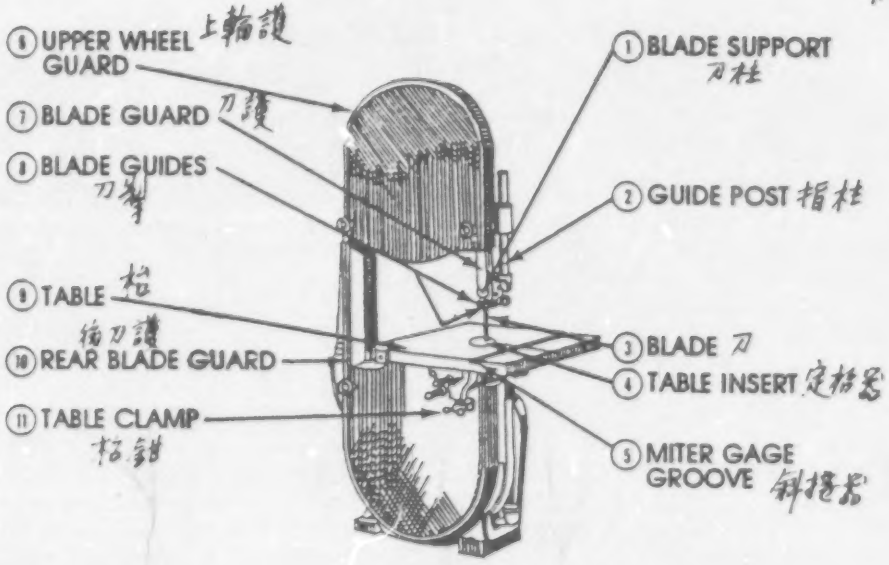
鋸床

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Remove jewelry, eliminate loose clothing and confine long hair.
3. Use properly secured and adjusted guards at all times.
4. Adjust the guide and guard to within 1/4 inch of work.
5. Remove scrap only when machine is stopped.
6. Avoid backing out of a cut (kerf).
7. Keep hands and fingers in such a position that there is no danger of their slipping into the blade. Hold work piece on either side of the cutting line. Use a push stick where necessary.
8. Do not leave the machine until it has stopped.
9. Consult with your instructor before cutting large or irregular shaped pieces.

安全建議

1. 戴合適的護眼鏡.
2. 除去手錶寬衣.束起長髮.
3. 常正確地裝妥和調整好護罩.
4. 把指標和護罩調整到离作物 1/4 吋地方.
5. 只在機器停止後才清理木屑.
6. 避免中途退出切刀.
7. 手避免指在在一安全位置上避免滑入切刀內.在切線兩邊按着作物.必要時用推木幫助.
8. 机器未停止時不要離開机旁.
9. 在切大的或不定型之材料時得先教於教師.


6 UPPER WHEEL GUARD 上輪護
7 BLADE GUARD 刀護
8 BLADE GUIDES 刀導
9 TABLE 枱
10 REAR BLADE GUARD 後刀護
11 TABLE CLAMP 枱鉗
1 BLADE SUPPORT 刀柱
2 GUIDE POST 指柱
3 BLADE 刀
4 TABLE INSERT 定枱器
5 MITER GAGE GROOVE 斜度器

S-5.23

BAND SAW

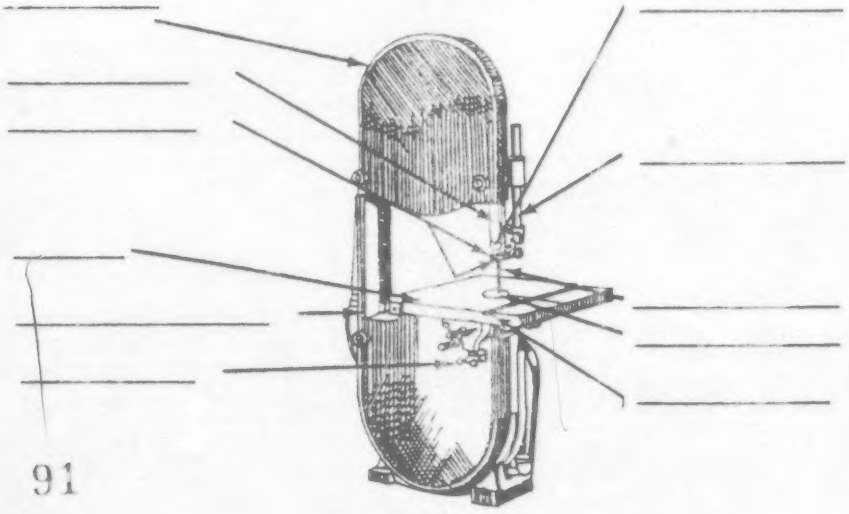
Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

1.	It is safe to tilt the table for cutting bevels.	T	F
2.	The lower band wheel does not require a guard.	T	F
3.	The saw should be stopped by forcing a piece of wood against the blade.	T	F
4.	The blade guard should be adjusted to about 1/4" from the work.	T	F
5.	It is safe to use the fence for cutting several pieces of wood to the same length.	T	F
6.	The hands should come no closer than 2" from the blade.	T	F
7.	The blade guides should be adjusted tight against the blade.	T	F
8.	Instructor's permission is required to operate a band saw.	T	F
9.	Adjustments should be made with the power off.	T	F
10.	Eye protection is not required when operating a band saw.	T	F

11. If the work does not cut easily you should:

(a) speed up the blade
(b) push harder
(c) replace the blade
(d) check with your instructor



S-5.24

彎鋸

學生姓名_____
級別_____
日期_____成績_____

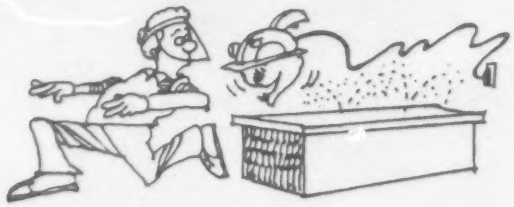
安全測驗

1.	切斜角規時轉動桌子是安全的	是	非
2.	帶輪的下半部不需有護蓋	是	非
3.	迎著刀把一塊木材推过去可使鋸停止	是	非
4.	刀護应調整离开作物 1/4吋位置	是	非
5.	切数塊同樣大小木材時用橫栅是安全的	是	非
6.	手应離刀最少 2吋地方	是	非
7.	应把刀引對正刀調整至紧	是	非
8.	操作彎鋸应得教師准許	是	非
9.	關掉馬達才可調整機器	是	非
10.	操作彎鋸時不須教師准許	是	非

11. 如有困難割切木時你应：
a. 加速刀片
b. 用力推
c. 換刀片
d. 求教於老師

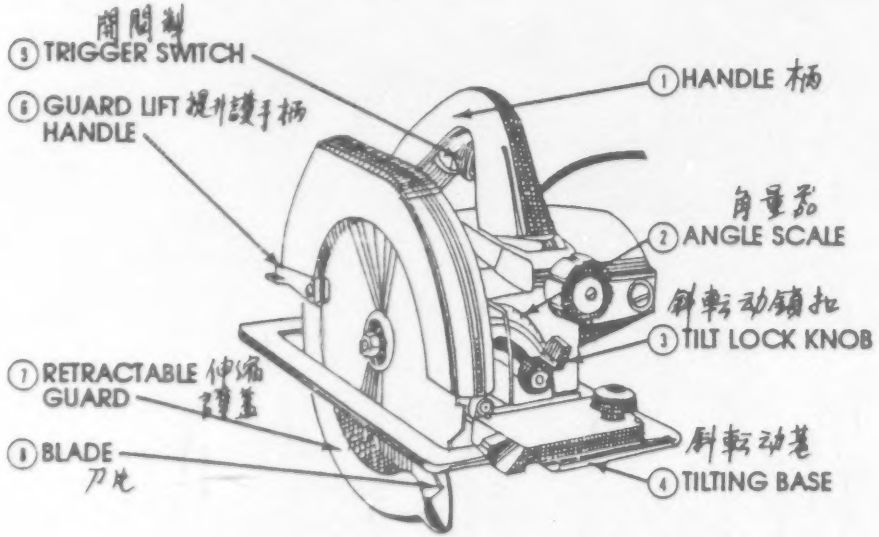
OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Portable Circular Saw



SAFETY SUGGESTIONS

1. Make sure that telescoping guard returns automatically to cover the blade after each cut.
2. Do not set saw down until blade stops.
3. Eye protection must be worn while using saw.
4. If the saw blade binds or smokes, stop cutting immediately.
5. Make sure the power cord is clear of the blade.
6. Be sure the material you are cutting is adequately supported.
7. Remove tie, rings and watch, and roll up sleeves.
8. ChecL the base setting for the proper depth of cut.



未得教師准許不得操作此機器

手提圓鋸

安全建議

1. 在每切一刀後確知持種情況自動回転至蓋下.
2. 直至刀片已停止時才放下鋸.
3. 用鋸時一定要上護眼鏡.
4. 如刀片捲綁或冒煙,马上停止割切.
5. 確定刀片上之电連綫清楚.
6. 確知切割中的材料正確地支撐着.
7. 除去領帶,戒指,和手錶,捲起衣袖.
8. 檢查机底之正確切的深度.

PORTABLE CIRCULAR SAW

Student Name_____
Class_____
Date_____ Grade_____

SAFETY QUIZ

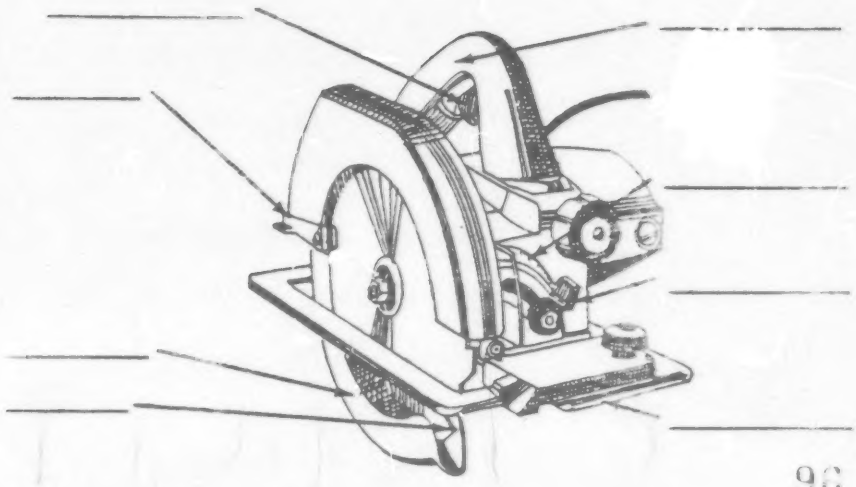
1. Permission should be obtained before operating this machine. T F
2. The guard can be wedged so that it will not be operable. T F
3. Eye protection is not necessary when using this machine. T F
4. You should not set the saw down until it has completely stopped. T F
5. The saw blade should extend about 1/8" beyond the thickness of the material being cut. T F

手提圓鋸

學生姓名_____
級別_____
日期_____ 成績_____

安全測驗

1. 在操作此机器前必得教師准許 是 非
2. 護蓋可能會被卡住所以不可操作 是 非
3. 用此机器時不必要戴護眼鏡. 是 非
4. 直至鋸完全停止不在放下鋸. 是 非
5. 鋸片应伸出切割材料 1/8 吋厚度的地方. 是 非

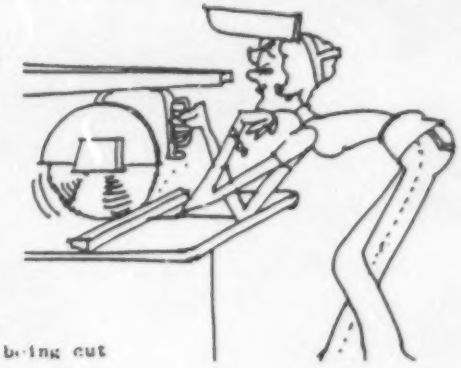


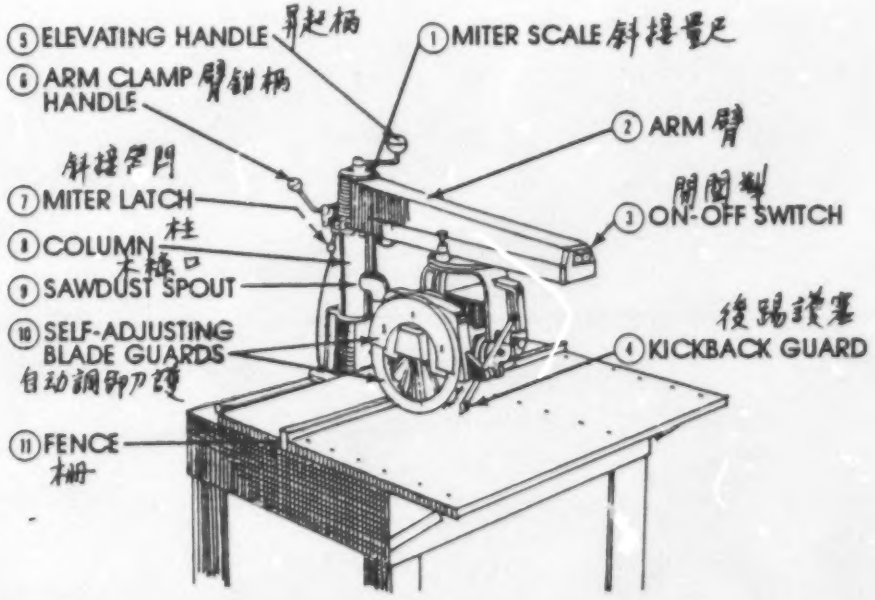
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Radial Arm Saw

SAFETY SUGGESTIONS

1. Be sure that the saw travels easily on the arm.
2. Be sure that the blade will not extend beyond the front of the table.
3. Before starting make sure that the guard telescopes properly.
4. Make sure that the blade is stopped before leaving the machine.
5. Make sure that the material being cut is tight against the fence.
6. Eye protection must be worn while operating this machine.
7. Be sure the saw returns to the rear of the table at the completion of the cut.





S-5.27

Chinese Version

未得教師准許不得操作此機器

旋臂鋸

安全建議

1. 確知鋸在臂上運転自如.
2. 確知刀片不會伸過枱的前面.
3. 開動前確知速護正確地嵌入.
4. 離開機器前確知刀片已停止.
5. 確知被切物緊綁於柵上.
6. 操作時一定要帶護眼鏡.
7. 確知在完成割切後鋸回到枱的後面.

RADIAL ARM SAW

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

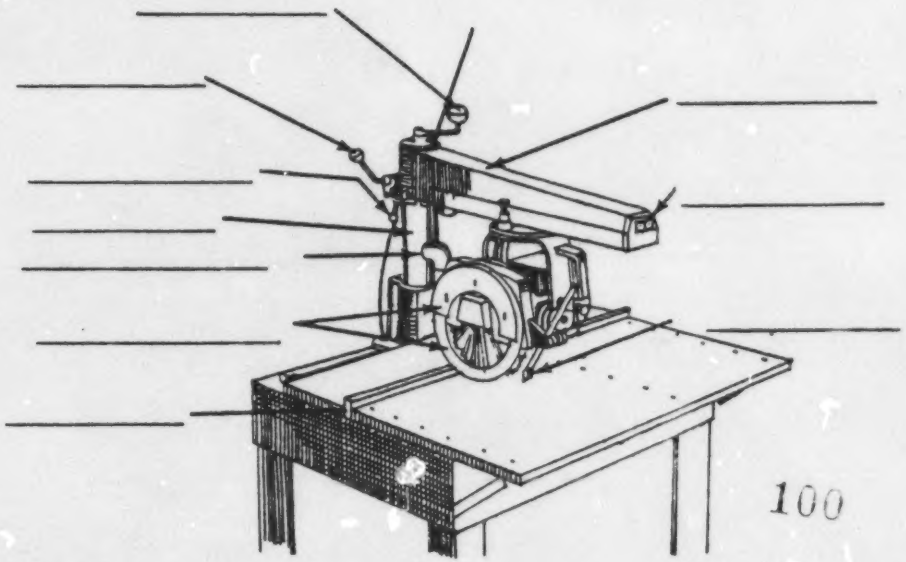
1. Eye protection is not necessary except when ripping. T F
2. You may leave the machine as soon as you have pushed the "off" switch. T F
3. The guard must be in place when ripping. T F
4. The saw blade may extend beyond the table. T F
5. The blade should be installed so that in cross cut position the teeth at the bottom of the blade point away from the operator. T F
6. When ripping, one hand must hold the material and the other hand operate the saw. T F
7. In cross cutting, the saw should automatically return to the rear of the radial arm upon the completion of a cut. T F

旋臂鋸

學生姓名 _____
級別 _____
日期 _____ 成績 _____

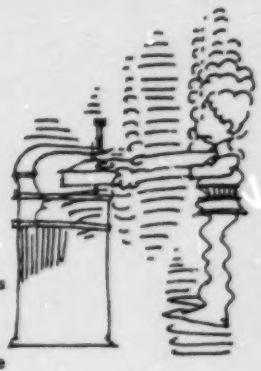
安全測驗

1. 除非鋸開否則不用戴護眼鏡. 是 非
2. 當你按下"off"掣時即可离開机器 是 非
3. 鋸開時護盖一定要定位. 是 非
4. 鋸片可以伸过枱面 是 非
5. 刀片要装如何以在橫切位置時刀片不会對着操作者. 是 非
6. 在橫切時.鋸左自動回到旋臂鋸後面. 是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Scroll Saw



SAFETY SUGGESTIONS

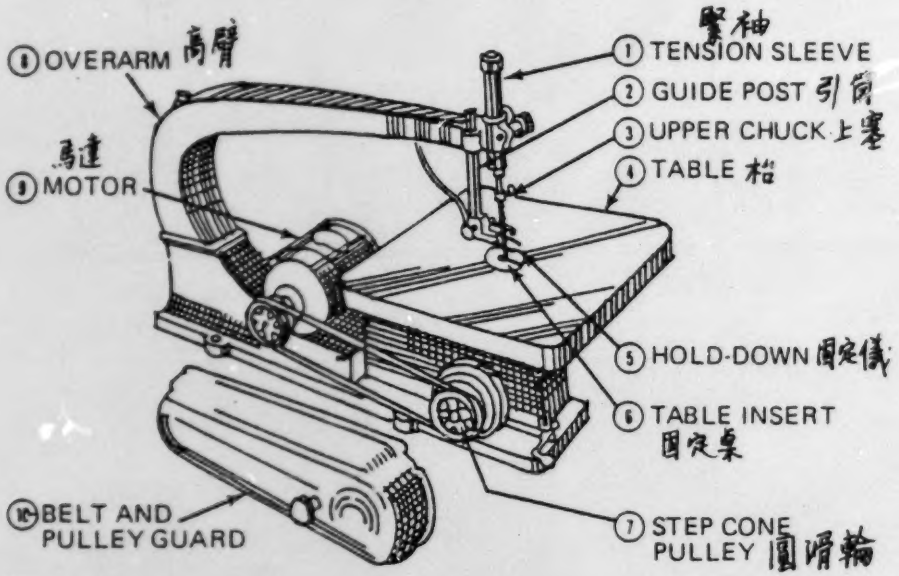
1. Eye protection must be worn while operating this machine.
2. Make all adjustments before turning on scroll saw.
3. Lower the hold-down so that the spring fingers bear lightly on the work.
4. The danger area is within the "line of cut". Hold work piece with both hands on either side of the "saw line".
5. Shut off power and clean the machine before you leave it.
6. Avoid overloading the machine by feeding the stock too fast.
7. Avoid pinching the blade by turning too sharply.

未得教師准許不得操作此機器

滑鋸

安全建議

1. 操作時一定要戴護眼鏡.
2. 在轉動滑鋸前調整机器.
3. 放低壓定器使彈簧輕輕貼在工作物上.
4. 「切线」內是危險地帶.用双手扶着工作物在「鋸线」边沿.
5. 在離開机器前關掉馬達清理机器.
6. 避免输入工作物过量以使机器負荷過重.
7. 避免轉动得太厲害使它着刀.



Chinese Version

SCROLL SAW

Student Name_____
Class_____
Date_____ Grade_____

渦鋸

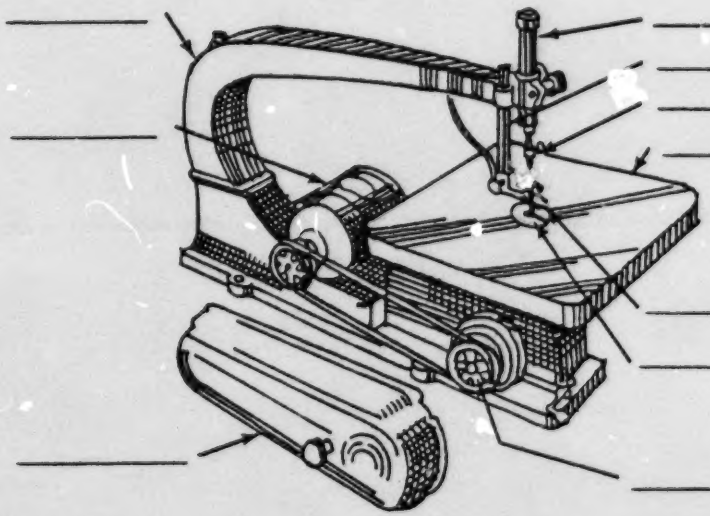
學生姓名_____
級別_____
日期_____ 成績_____

SAFETY QUIZ

安全測驗

1. If the blade pinches in the kerf do not stop the machine. T F
2. Eye protection must be worn. T F
3. It is not necessary to have the flat side of the stock next to the table. T F
4. Fingers should be kept away from the line of cut. T F
5. Adjustments may be made while the saw is running. T F
6. The hold-down should bear lightly on the work. T F

1. 假如刀片被着鋸口不要停止機器. 是 非
2. 一定要戴護眼鏡. 是 非
3. 不必要使易作物的平面附於桌上. 是 非
4. 手指要離開切线. 是 非
5. 當鋸在転动中時可調整機器. 是 非
6. 固定器左祂輕放在易作物上. 是 非



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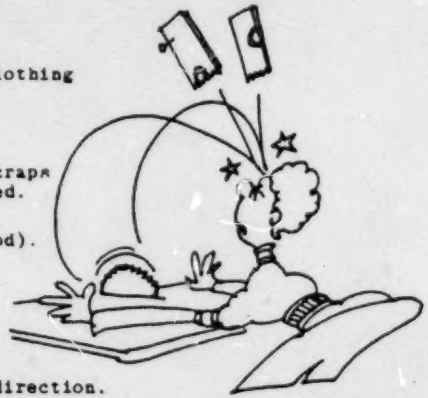
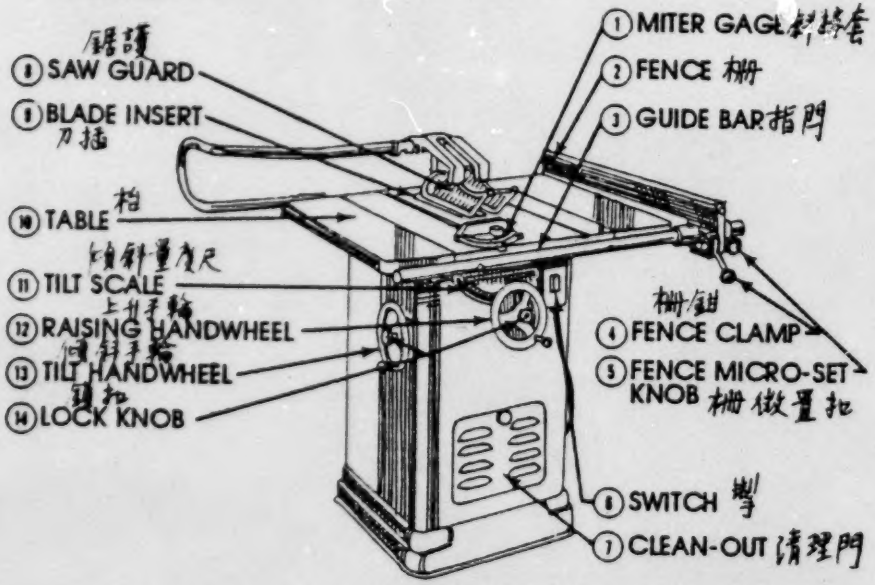
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Table Saw

SAFETY SUGGESTIONS



1. Wear approved eye protection.
2. Remove jewelry, eliminate loose clothing and confine long hair.
3. Use properly secured and adjusted guards at all times.
4. Make all adjustments and remove scraps with the machine completely stopped.
5. Select proper blade and set at correct height (1/8 inch above wood).
6. Never saw freehand - never reach over the saw blade.
7. Stand to the side - not in line with the blade.
8. Make sure blade is installed with the teeth pointing in the proper direction.
9. A push stick should be used when the hands come within 3 inches of the blade.
10. Use the rip fence for ripping and miter gauge for crosscutting.
11. Stop the machine, lower blade below table, and clean up scraps when completed.



未得教師准許不得操作此機器

桌鋸

安全建議

1. 戴適合的護眼鏡.
2. 除去手飾寬衣束起長髮.
3. 常常安裝好和調整好護蓋.
4. 當機器完全停止時調整好機件和清除碎片.
5. 選擇合當的刀片和裝在正確高度(在木材值吋以上)
6. 永不要隨手鋸切 — 不要伸手過鋸面
7. 站在鋸的一邊 — 不要迎鋸同一線
8. 確知刀片裝妥後其齒輪指向正確的方向.
9. 當手離刀片3吋時應用推棍
10. 撕裂時要用防裂柵,橫切時用摩帽測量器.
11. 當完工時停止機器,放刀片於桌下清理碎片.

TABLE SAW

Student Name _____
Class _____
Date _____ Grade _____

枱鋸

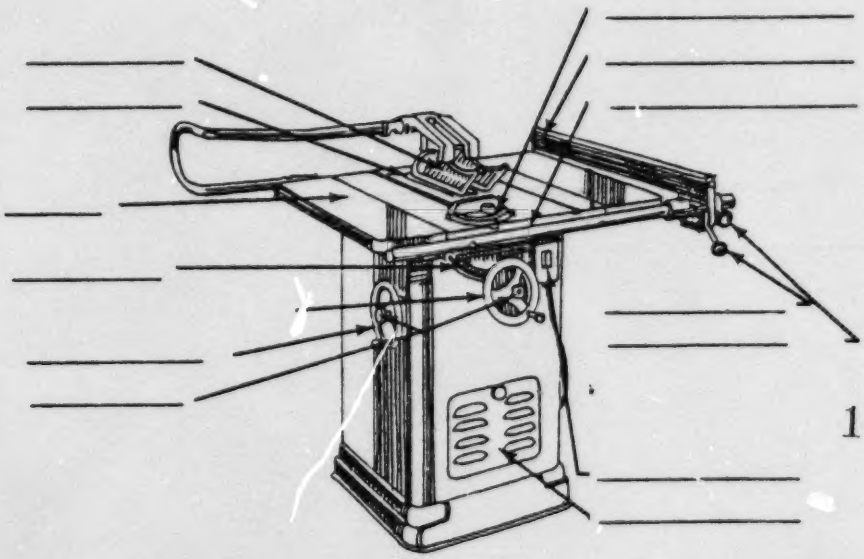
學生姓名 _____
級別 _____
日期 _____ 成績 _____

SAFETY QUIZ

安全測驗

1.	It is safe to saw freehand.	T	F
2.	The fence should always be used.	T	F
3.	The guard is not always necessary.	T	F
4.	When ripping it is best to stand directly behind the blade.	T	F
5.	Eye protection should be worn when using a table saw.	T	F
6.	The saw blade should be adjusted so that the teeth clear the thickness of material by the depth of the teeth.	T	F
7.	A helper or roller should be used when ripping long pieces.	T	F
8.	A push stick is necessary when ripping narrow stock.	T	F

1.	隨手鋸物是安全的	是	非
2.	應常用欄柵	是	非
3.	不常需要護罩	是	非
4.	當鋸開時最好直接站在刀片後面	是	非
5.	當用鋸時應戴護眼鏡	是	非
6.	鋸片應調整到其齒輪與材料厚度相符	是	非
7.	當斷裂長木時需要一幫手或滾輪	是	非
8.	當撕裂窄木時要用推棍	是	非



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OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Metal Shaper

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Make adjustments and measurements only when the machine is at a complete stop.
3. Securely mount the work piece in the holding device.
4. Make certain that the ram and head will clear the work and holding devices.
5. Keep hands and fingers a minimum of 6 inches from the cutting tool and all other moving parts.
6. Avoid laying tools on the machine.
7. Avoid standing directly in front of or behind the ram.
8. Make sure machine comes to a complete stop before leaving it.
9. Never remove chips while the machine is in motion.
10. Return the machine to normal and all tools and equipment to the proper storage place.

Chinese Version

未得教師准許不得操作此機器　　金屬成形機

安全建議

1. 戴合適護眼鏡.
2. 調整和量度得要等機器完全停止時行之.
3. 穩當地將金屬先裝在器械上.
4. 確知机械上的鉗子和省部已裝穩(撞擊器)
5. 將手和手指最少保持與切具和転動中的零件6吋英上的距離.
6. 避免將工具放在機器上.
7. 避免站在撞擊器的前或後面.
8. 離開機器前確知機器已完　停止.
9. 當机器轉动中切勿清理碎物.
10. 將机器回到正常,工具裝備放回適當的儲藏地方.

Chinese Version

METAL SHAPER

Student Name_____
Class_____
Date_____Grade_____

金屬成形機

學生姓名_____
級別_____
日期_____成績_____

SAFETY QUIZ

1. It is permissible to use compressed air to remove chips while the machine is running. T F
2. Eye protection must be worn. T F
3. A heavy cut may get the job done more quickly but also could be unsafe. T F
4. Chips may be removed while the machine is running. T F
5. All clearances should be checked before the ram is set in motion. T F
6. All set-ups should be approved by your instructor. T F

安全測驗

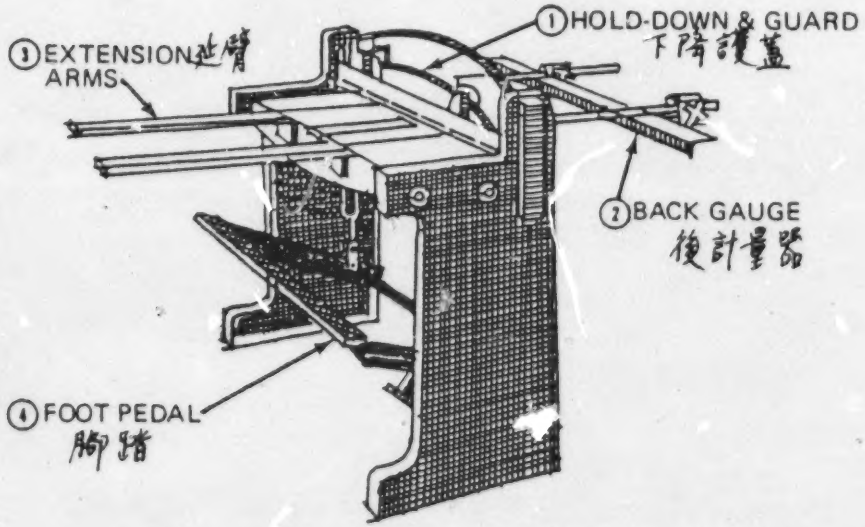
1. 當機器在轉動中時可以壓縮空氣去清除屑片. 是 非
2. 一定要戴護眼鏡. 是 非
3. 一大切割可以加快完成的作,但亦可能不安全. 是 非
4. 當機器轉動時可以清理木屑. 是 非
5. 當開動撞擊器前一定要做最後檢查. 是 非
6. 全部裝備須要得到教師的准許. 是 非

Metal Squaring Shear

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

SAFETY SUGGESTIONS

1. Check setup and machine be ore operating.
2. Never surpass the capacity of the machine.
3. Feed and operate from the front or the operator's position.
4. Always keep your fingers away from the pressure bar and blade, a minimum of 4 inches.
5. Keep the foot that is not being used out from under the treadle.
6. Allow small pieces to drop; do not attempt to catch them.
7. Remove burrs before working; gloves or pads are recommended for handling sheet metal, especially large pieces.
8. Place scraps or trimmings in metal waste container and return machine to normal position.
9. Whenever two people are needed to operate the shear, one shall be the operator, the other the helper.



未得教師准許不得操作此机器　　方型金屬剪床

安全建議

1. 在操作前檢查裝備及机器
2. 永不要超過機器的容量
3. 輸入5操作時由操作者的前方或位置進行
4. 手指要保持4吋以上5氣壓棒和刀片的距離
5. 不要把置閥的一足置於剪床下
6. 容許小体積的屑片落地，不要嘗試去捉着它
7. 工作前先清理粗糙孔緣在操作金屬片，尤其是大的金屬片最好用手套
8. 完工後將碎片放入廢物箱，把機器放回原來位置
9. 當情況須要二人操作剪床時，一人負責操作另一人為幫手

Chinese Version

METAL SQUARING SHEAR

Student Name _____
Class _____
Date _____ Grade _____

SAFETY QUIZ

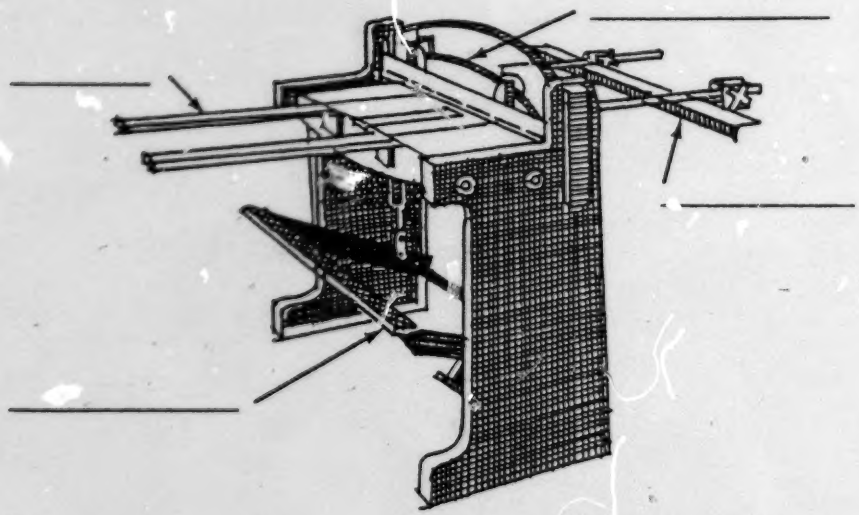
1. Feed and operate from the treadle side of the machine only. T F
2. It is permissible to let small pieces drop into a box as they are cut. T F
3. Two students may operate the shear together. T F
4. For some projects the guard can be removed. T F
5. The foot treadle should be so arranged that there is a 2" floor clearance at the bottom of a stroke. T F

方型金屬剪床

學生姓名 _____
級別 _____
日期 _____ 成績 _____

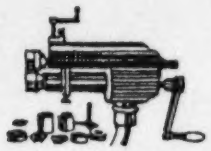
安全測驗

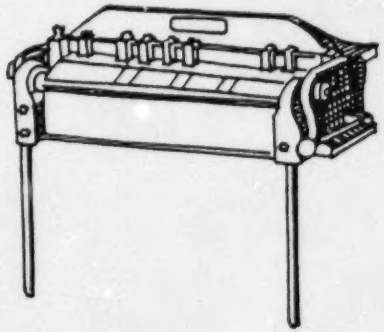
1. 輸入和操 時只站在脚踏板旁 是 非
2. 當切割時准許小塊碎片跌落箱子中 是 非
3. 兩個學生可以共同操作剪床 是 非
4. 有些工作可以移去護蓋 是 非
5. 脚踏板要離地2吋 是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THESE MACHINES

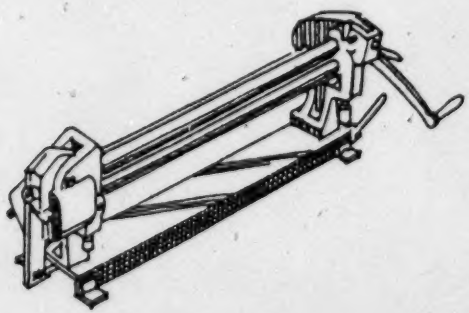
Sheet Metal Machines





SAFETY SUGGESTIONS

1. Remove sharp burrs and edges from sheet metal before attempting to work it in the machines.
2. Never attempt to bend, roll, crimp, bead, etc., metal which is heavier than the capacity of the machine.
3. Keep hands and fingers clear of moving parts.
4. Never work more than one thickness of metal at one setup.
5. Avoid slamming or dropping the handles of the machine.
6. Be careful that moving parts or metal do not strike others.
7. Take care not to place hands in a position that will allow them to slip into the rolls, jaws, etc.



S-5.37

Chinese Version

未得教師准許不得操作此機器　金屬板機器

安全建議

1. 當曾試在機器上操作時先清理金屬板之粗糙孔緣.
2. 永不曾試去彎曲滾軋捲縮串起比機器容量較大的金屬片.
3. 手和手指要離開轉動中的零件.
4. 每次裝備只能操作一有厚度的金屬板.
5. 避免砰然閉開或跌下機器的柄.
6. 小心轉動中的零件和金屬不互相撞擊.
7. 小心不要讓手滑進捲輪,齒輪等中.

Chinese Version

SHEET METAL MACHINES

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

1. The infeed rolls of a roll machine are dangerous to the operator's hands. T F
2. Sheet metal machines can be damaged by overloading T F
3. Sharp burrs and edges should be removed before attempting to place in the machine. T F
4. Fingers must be kept clear of moving parts. T F
5. Quarter inch mild steel stock can be formed on the sheet metal machine. T F

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S-5.38

金屬板機器

學生姓名_____
級別_____
日期_____成績_____

安全測驗

1. 滾轉輸入機器對操作者的手是危險的 是 非
2. 過載會損壞金屬板 是 非
3. 在實試操作機器前先清理粗糙乳緣 是 非
4. 手指不要靠近転動中的零件 是 非
5. 金屬板機器可以製造$\frac{1}{4}$吋厚柔鋼 是 非

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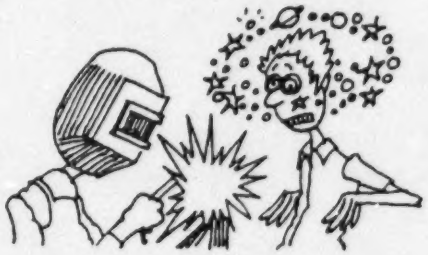
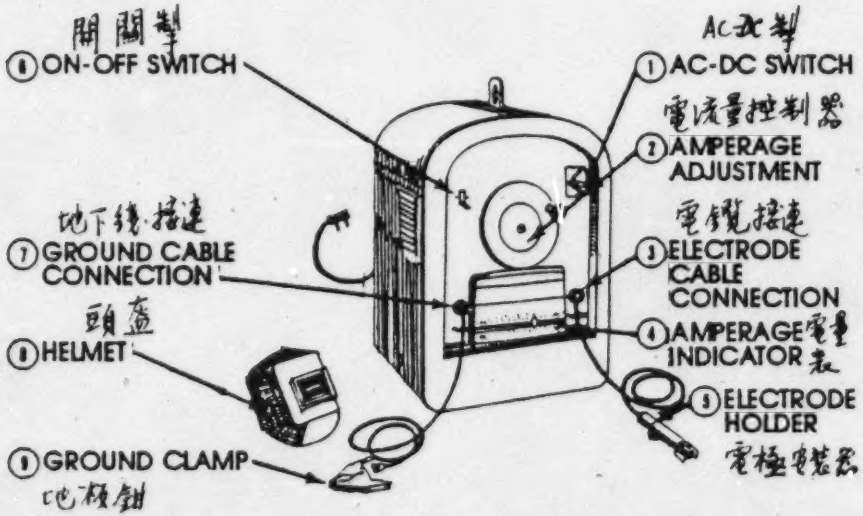
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

ArcWelder

SAFETY SUGGESTIONS



1. A welding helmet must be worn when welding.
2. Proper ventilation must be available.
3. Goggles must be worn when chipping slag.
4. Others in the area must be warned prior to striking an arc.
5. Gloves and proper clothing must be worn when welding.
6. Closed containers should not be welded without the instructor's permission.
7. Do not stand in wet areas while welding.
8. Screens to protect others must be in place before welding is started.



S-5.39

Chinese Version

未得教師准許不得操作此焊器　　弧形熔杆機

安全建議

1. 燒杆時一定要帶頭盔
2. 要有適合的通風設備
3. 當切熔渣時，一定要帶護目鏡
4. 開始燒焊前確知無別人站在工作區
5. 手套和合適的衣服工燒焊時必要的
6. 封蓋的容器未得教師准許不得燒焊
7. 當燒焊時不要站在濕滑的地方
8. 當開始燒焊前一定要架起保護別人的距板

ARC WELDER

Student Name_____
Class_____
Date_____Grade_____

SAFETY QUIZ

1. You should warn anyone nearby when you start to weld. T F

2. Goggles as well as a welding hood should be available before you start to weld. T F

3. A closed container is dangerous to weld. T F

4. Gloves are not necessary when welding. T F

5. It is dangerous to weld without proper ventilation. T F

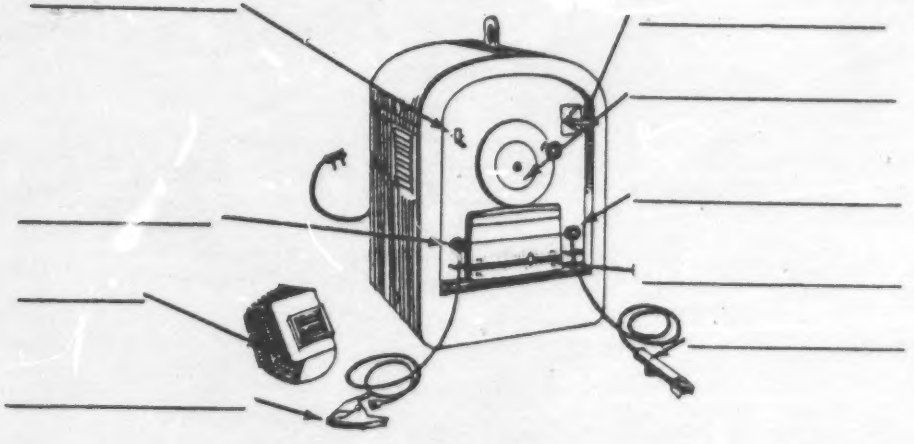
Chinese Version

弧形熔焊機

學生姓名_____
組別_____
日期_____成績_____

安全測驗

1. 當你開始燒焊時要警告在你附近的人 是 非
2. 在你開始燒焊前,頭盔護目鏡一定要準備好 是 非
3. 密封的箱子是对燒焊有危險的 是 非
4. 燒焊時要帶手套 是 非
5. 在沒有通風的通風設備下燒焊是危險的 是 非



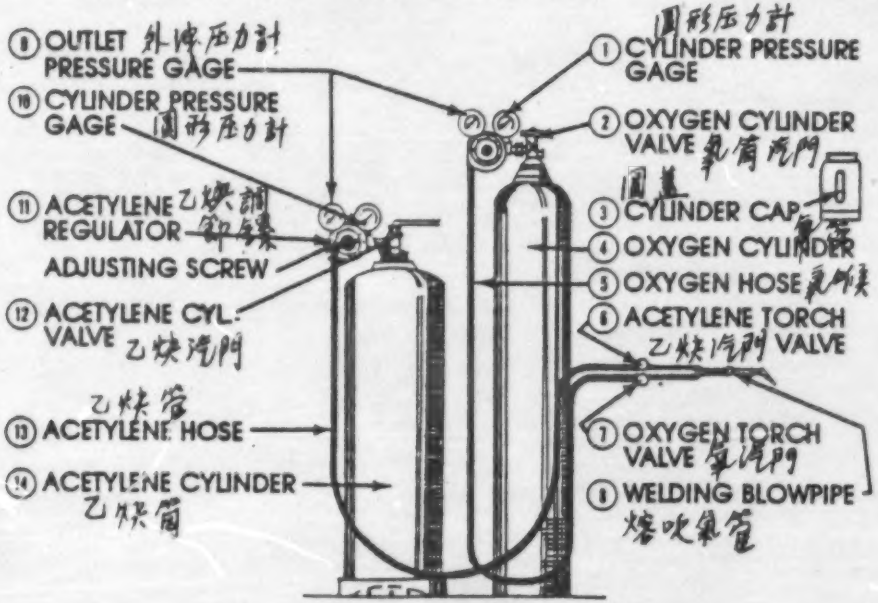
OBTAIN PERMISSION FROM THE INSTRUCTOR BEFORE USING THIS MACHINE.

Oxy-Acetylene Welder

未得教師准許不得操作此機器　氧乙炔熔焊機

SAFETY SUGGESTIONS

1. Do not weld galvanized metal without proper ventilation.
2. Do not allow oil to come in contact with hoses or equipment.
3. Gas bottles must be erect and secure at all times.
4. Protective goggles and spark-resistant clothing must be worn when welding.
5. Do not weld or cut on a closed container without instructor's approval.
6. Confine all cutting and welding to the designated area in the shop.
7. Turn off torch valves when finished with equipment.
8. Keep the cylinder caps on the bottles when not in use.
9. Turn off gas and oxygen at tanks or stations at the end of class session.
10. Bend the end of long welding rods to identify hot end and to reduce potential exposure to eye injury.


⑨ OUTLET 外牌压力計 PRESSURE GAGE
⑩ CYLINDER PRESSURE GAGE 圓形压力計
⑪ ACETYLENE 乙炔調節螺 REGULATOR ADJUSTING SCREW
⑫ ACETYLENE CYL. VALVE 乙炔汽門
⑬ ACETYLENE HOSE 乙炔管
⑭ ACETYLENE CYLINDER 乙炔筒
① CYLINDER PRESSURE GAGE 圓形压力計
② OXYGEN CYLINDER VALVE 氧筒汽門
③ CYLINDER CAP 筒蓋
④ OXYGEN CYLINDER
⑤ OXYGEN HOSE 氧喉
⑥ ACETYLENE TORCH VALVE 乙炔汽門
⑦ OXYGEN TORCH VALVE 氧汽門
⑧ WELDING BLOWPIPE 熔吹氣管

S-5.41

安全建議

1. 無通風之地點不得燒焊鋅鉄的金屬
2. 不要讓油漬與喉管或器材接觸
3. 常常檢好空氣筒
4. 當燒焊時一定要戴護目鏡和防火花衣
5. 無教師之准許不得燒焊或切密封的容器
6. 在工場指定之地點操作切或燒焊
7. 當用完設備後關掉汽門
8. 當不用時保護器筒好
9. 每堂課完時關掉氣和氣筒
10. 將長焊條彎曲去証明熱端以減少眼睛可能受到傷害的機會

OXY-ACETYLENE WELDER

Student Name_____
Class_____
Date_____ Grade_____

氧乙炔熔焊機

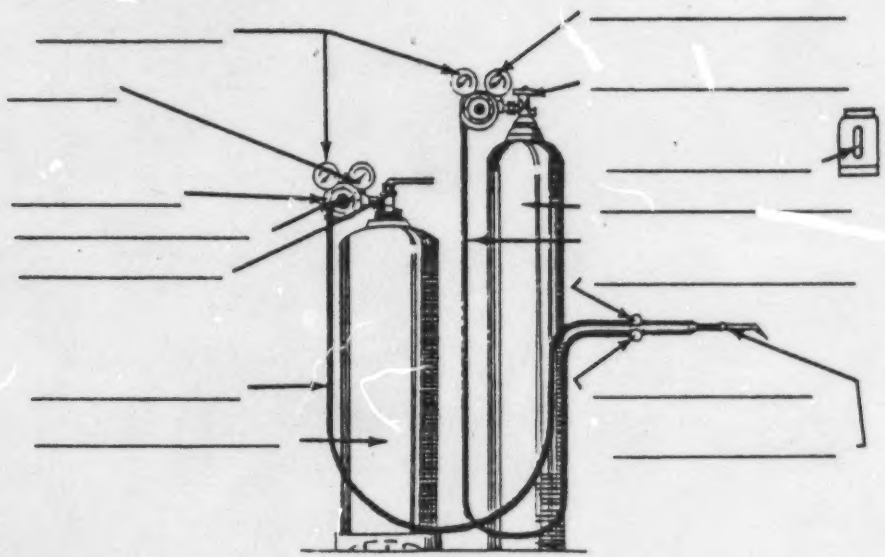
學生姓名_____
級別_____
日期_____ 成績_____

SAFETY QUIZ

1. Gas bottles may be laid on the floor when not in use. T F
2. Closed containers are not hazardous to weld or repair. T F
3. The cylinder caps should be placed on all bottles when not in use. T F
4. Eye protection must be worn for all welding, cutting and chipping operations. T F
5. The equipment should not be wiped down with oily rags. T F

安全測驗

1. 當不用時可以將氣瓶放在地板上. 是 非
2. 密封的容器無危險性(焊接或修理) 是 非
3. 當不用時圓蓋在瓶在瓶子上. 是 非
4. 所有熔焊.切割或打碎時一定要戴護眼鏡 是 非
5. 不要用油布去抹機器 是 非



Chinese Version

OPERATION CHECK LIST
OXY-ACETYLENE WELDER

1. Obtain permission from the teacher to use oxy-acetylene welder. ( )

2. Adjust welder for operation in following sequence:
   a. Inspect regulator's adjusting screws to insure that they are all the way out (counterclockwise). ( )
   b. Open oxygen cylinder (green) valve slowly. (wide open -- stand to one side) ( )
   c. Open acetylene cylinder (red) valve (¼ to ½ turn) ( )
   d. Open the torch oxygen valve one turn. ( )
      (1) Turn oxygen regulator valve adjusting screw until proper reading is obtained. (See chart for tip being used.) ( )
      (2) Turn off torch oxygen valve. ( )
   e. Turn the acetylene regulator adjusting screw in slowly until correct reading is obtained for tip being used. ( )

3. Lighting torch procedure:
   a. Turn torch acetylene valve 1/16 of a turn, then ignite acetylene gas coming from tip with spark lighter. ( )
   b. Readjust the acetylene regulator adjusting screw until the correct reading is obtained. ( )
   c. Turn acetylene torch valve on slowly until flame jumps away from tip, then slightly reduce the fuel supply to bring the flame back to the tip. ( )
   d. Adjust torch oxygen valve to obtain neutral flame. ( )

Do I understand the following operating instructions?

1.	I must wear welding goggles when gas welding.	Yes	No
2.	I must never lay down a lighted torch.	Yes	No
3.	I must never use acetylene gas at a pressure greater than 15 lbs. per square inch.	Yes	No
4.	I must be careful not to burn hoses.	Yes	No
5.	I must replace goggles, hoses and torch in proper places and clean up area when I am through welding.	Yes	No
6.	I must have teacher check my set up before lighting torch.	Yes	No

STUDENT'S NAME_____ TEACHER'S INITIALS_____

操作氧乙炔熔焊機之步驟

1. 操作氧乙炔熔焊机事得教師准許. ( )

2. 以以下步驟調整氧乙炔熔焊機以備操作:
   a. 檢查所有的螺釘看是否是反時鐘方向. ( )
   b. 慢慢打開氧筒(綠色).(打開一路在一旁) ( )
   c. 打開乙炔筒(紅色)汽門(半至士轉) ( )
   d. 打開氧汽門(轉一週) ( )
      (1) 將氧汽門調整至能正確地表明度量(參閱表) ( )
      (2) 閉去氧汽門. ( )
   (e) 慢慢打開乙炔汽門轉至能正確表明度量. ( )

3. 燃火步驟:
   a. 轉一週乙炔火汽門,並用火花燃器点燃乙炔氣 ( )
   b. 重新調整乙炔控制器至能正確表明度量 ( )
   c. 轉慢開啟乙炔火头至火從末端噴出,然後慢慢做燃料至火头四周末端 ( )
   d. 調整氧火汽門去取得中性火头 ( )

我明白以下之操作步驟嗎?

1.	當燒焊時我得戴護目鏡.	明白	不明白
2.	我永不要放下一燃着火棒.	明白	不明白
3.	我永不要在氣压大於15磅/每平方英吋時使用乙炔氣	明白	不明白
4.	我要小心不要去燒着喉管.	明白	不明白
5.	當燒焊完後我一定要清理好護目鏡,喉管和火棒並放回原位.	明白	不明白
6.	當燃火前我一定要得教師同意.	明白	不明白

學生姓名_____ 教師署名_____

S-5.43